# constellation audio

## Simply, Light Years Ahead.

**Perseus phono preamp**
owner's manual

# CAUTION

## RISK OF ELECTRIC SHOCK
## DO NOT OPEN

**CAUTION**
To reduce risk of electric shock, do not remove any of the phono preamplifier's cover plates or screws. There are no user serviceable parts inside. Contact qualified service personnel.

**WARNING**
To reduce risk of fire or electric shock, do not expose this preamplifier to moisture, rain, or excessive humidity.

The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating maintenance (servicing) instructions in the literature accompanying the appliance.

**Thank you for purchasing the Constellation Audio Perseus phono preamplifier.** We designed the Perseus to achieve greater fidelity *and* greater flexibility than any other phono preamp—and to elevate your vinyl playback system to a level you didn't think possible.

The Perseus employs circuitry and controls unlike those found in any other phono preamp. Thus, setting it up requires a few steps not normally needed with conventional phono pres. By taking a few minutes to read this manual before you operate the Perseus, you will be assured of getting maximum performance from this component.

## Contents

## Before you install the Perseus

### Unpacking

Take care when you remove the Perseus from its packaging. Because of its machined aluminum top chassis, it is heavier than the average preamp. Have an extra person nearby to help if you need it. You may wish to use gloves to protect your fingers.

### Power supply setup
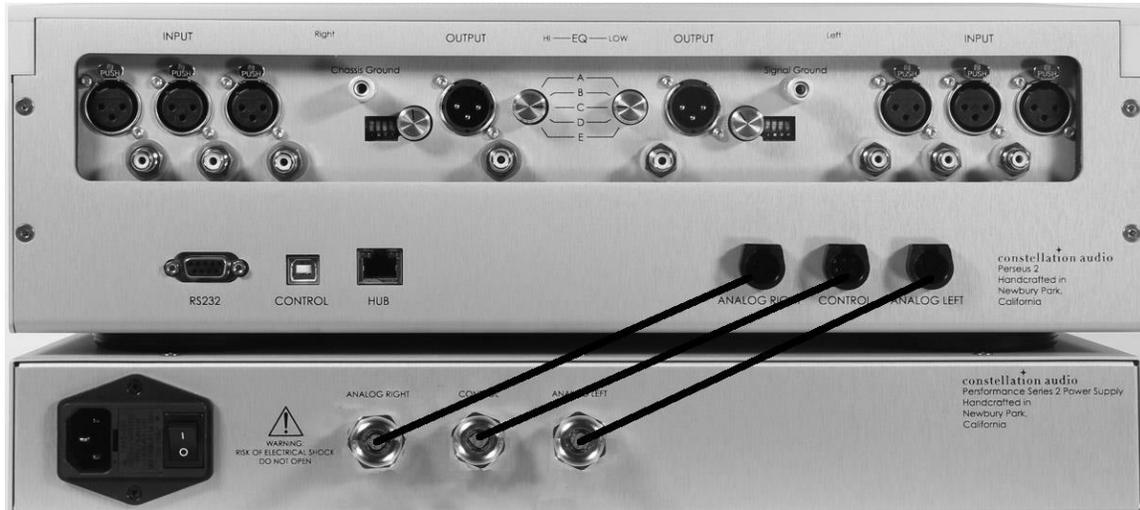


The Perseus's separate power supply (bottom component in the picture above) must be connected to the Perseus main chassis (top component in the picture above) as shown above before you plug the unit into a wall. Make sure the power switch on the power supply is in the off (O) position.

The supplied cables which are permanently attached to the power supply are spiral-wrapped, gold-plated copper designed for aerospace use, and can handle up to 30 amps.

Connect one of the supplied cables to the Analog Left power socket on the Perseus, then into the Analog Left power socket on the power supply as shown above. Repeat with the Analog Right and Control power connections.

At this point you can plug the Perseus power supply into the wall socket. Leave the master power switch off until you connect your other equipment to the Perseus.

**DO NOT remove the power cables while the unit is powered on. If you do happen to accidently pull one of them out, DO NOT plug it back in. Turn off the power supply using the hard switch on the rear panel, unplug the unit, then replace the cable. Failure to power down the unit before replacing a power cable can result in substantial damage to your Perseus.**

If you will be using the Constellation Audio Centaur or Hercules amplifiers (or any other high-powered amplifier), do not plug the Perseus into the same AC socket or into any other outlet connected on that circuit. Constellation Audio amplifiers draw a great deal of power and could affect the Perseus's performance if the amplifier(s) and preamp are plugged into the same electrical circuit or AC outlet.

When you connect or disconnect the AC cord, always grasp it by the plug, not by the cord itself. Pulling the plug out by the cord can damage the cord, the AC socket, and/or the Perseus.

## Installation notes

The Perseus preamplifier uses passive cooling; there are no internal fans. While the Perseus does not generate as much heat as an amplifier, it should still be located in an area with adequate ventilation.

There should be at least 6 in/15 cm of clearance between the sides and top of the preamp and the nearest wall or cabinet. If the Perseus is installed in a cabinet or an equipment closet, ensure the cabinet/closet has adequate ventilation. Installation in an unventilated cabinet or closet may cause the Perseus to overheat, significantly reducing its lifespan.

The Perseus requires a room-temperature environment to operation properly. Ambient temperature should be about 70°F/21°C, plus or minus 10°F/5°C. Never install the Perseus in a place where it may be exposed to direct sunlight, and do not install it next to a room heater, radiator, air conditioner, etc.

Make sure that the Perseus will not be exposed to moisture. Do not locate it in an area where it might be spilled on, and do not place it in a humid location (such as an unfinished basement).

We recommend leaving the Perseus on all the time to ensure maximum performance and the best possible sound quality.

Installing the Perseus in a place where it will be exposed to direct sunlight or moisture, or where it will not have adequate ventilation, will void your warranty.

## Connected components

The Perseus phono preamp is designed to be paired with any high-quality turntable, and with any quality preamp; ideally Constellation's Altair or Video preamps. Both balanced (XLR) and unbalanced (RCA) connections are available. XLR will provide the highest quality/lowest noise signals, and should be used when possible.

Before making or changing any connections on the Perseus, turn off the master power switch on the back of the power supply, and turn off the preamp and power amplifier(s).

## In the event of malfunction

Do not under any circumstances open the chassis of the Perseus. There are no user-serviceable parts inside. Opening the chassis can present a shock hazard even if the AC power is disconnected. Any alteration or modification of the Perseus's internal parts or circuit will immediately void your warranty.

If your Perseus does not function correctly, refer to the Troubleshooting section at the end of this manual. If you are still unable to resolve the problem, contact your Constellation Audio dealer.

If any liquid is spilled on the preamp, or if any metal object (such as a staple or a paper clip) is inadvertently forced inside, immediately disconnect the AC power and contact your Constellation Audio dealer.

## Turntable and preamp connections

### 1. XLR MC inputs



The two XLR inputs farthest to each side of the back panel of the Perseus are for use with MC cartridges. As you are looking at the rear panel, the left XLR inputs are for the right channel, the right inputs are for the left channel. These correspond with inputs MC-1 and MC-3. These XLR connections cannot be used concurrently with the RCA input below them; for example, you can use either MC-1 (XLR) or MC-2 (RCA), but not both. Use of XLR connections is recommended for the best possible audio quality. To remove an XLR plug, push on the tab above the jack and pull the plug out.

IMPORTANT NOTE: To preserve true dual-mono operation, the Perseus uses a symmetrical circuit layout. This configuration requires that the Perseus's back panel connections be laid out a little differently from those on most preamps. For example, the left-channel connection for input MC-1 is at the far right side of the back panel, and the right-channel connection for MC-1 is at the far left side. Connecting the cables in the usual side-by-side fashion will result in an incorrect installation and the mixing of sounds from different tonearms or turntables.

The MC input numbers from left to right, looking at the back of the Perseus are:
 MC-1$_{right}$, MC-3$_{right}$——MC-3$_{left}$, MC-1$_{left}$.

### 2. XLR MM input



The two XLR inputs closest to the center of the Perseus back panel are for use with MM cartridges. As you are looking at the rear panel, the left XLR input is for the right channel, the right input is for the left channel. These XLR connections cannot be used concurrently with the RCA input below them; for example, you can use either MM-1 (XLR) or MM-2 (RCA), but not both. Use of XLR connections is recommended for the best possible audio quality. To remove an XLR plug, push on the tab above the jack and pull the plug out.

IMPORTANT NOTE: To preserve true dual-mono operation, the Perseus uses a symmetrical circuit layout. This configuration requires that the Perseus's back panel connections be laid out a little differently from those on most preamps. For example, the left-channel connection for MM input is on the right side of the back panel, and the right-channel connection is on the left side. Connecting the cables in the usual side-by-side fashion will result in an incorrect installation and the mixing of sounds from different source devices.

## 3. RCA MC inputs
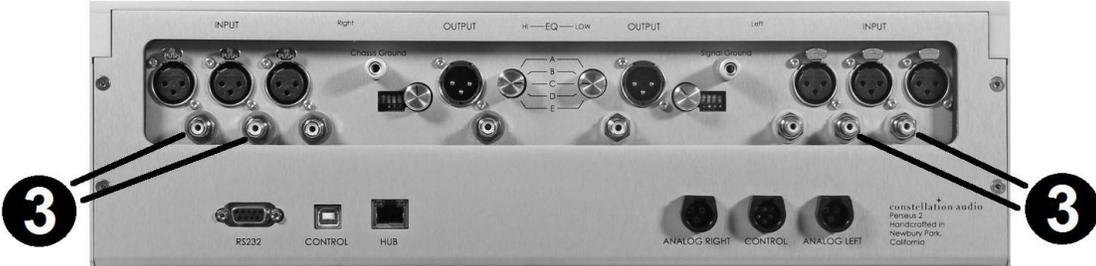


These unbalanced inputs are provided as a convenience for use with turntables having only unbalanced output. Whenever possible, we recommend using XLR connections instead. Connecting to an unbalanced turntable is handled in the same way an XLR balanced source. As you are looking at the rear panel, the left RCA input is for the right channel, the right input is for the left channel. These cannot be used concurrently with the corresponding RCA inputs; for each input, you can use either XLR or RCA, but not both.

The RCA input numbers from left to right, looking at the back of the Perseus are:
 MC-2$_{right}$, MC-4$_{right}$——MC-4$_{left}$, MC-2$_{left}$

IMPORTANT NOTE: To preserve true dual-mono operation, the Perseus uses a symmetrical circuit layout. This configuration requires that the Perseus's back panel connections be laid out a little differently from those on most preamps. For example, the left-channel connection for MC-2 is at the far right side of the back panel, and the right-channel connection is at the far left side. Connecting the cables in the usual side-by-side fashion will result in an incorrect installation and the mixing of sounds from different source devices.

## 4. RCA MM input
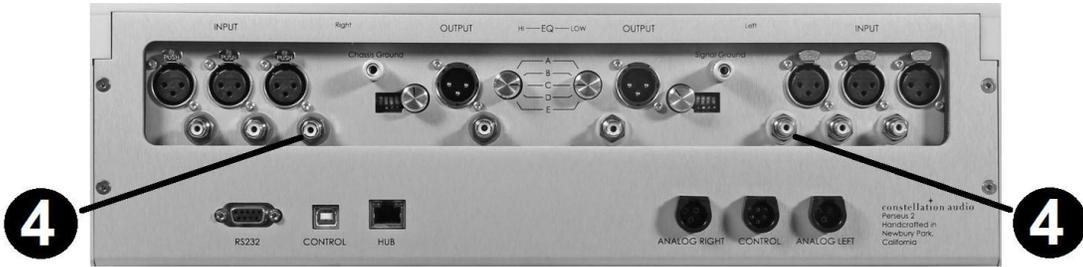


This unbalanced input is provided as a convenience for use with turntables having only unbalanced output. Whenever possible, we recommend using XLR connections instead. Connecting to an unbalanced source is handled in the same way an XLR balanced source.

IMPORTANT NOTE: To preserve true dual-mono operation, the Perseus uses a symmetrical circuit layout. This configuration requires that the Perseus's back panel connections be laid out a little differently from those on

most preamps. For example, the left-channel connection for MM is on the right side of the back panel, and the right-channel connection is on the left side. Connecting the cables in the usual side-by-side fashion will result in an incorrect installation and the mixing of sounds from different source devices.

## 5. XLR output



The inner XLR connections on the rear of the Perseus are outputs. To remove an XLR plug, push on the tab on the connector body and pull the plug out. Be sure to match the output to the correct channel on your preamp. As you are looking at the back of the Perseus, the output on the left side is for the right channel, the output on the right is for the left channel.

## 6. RCA output
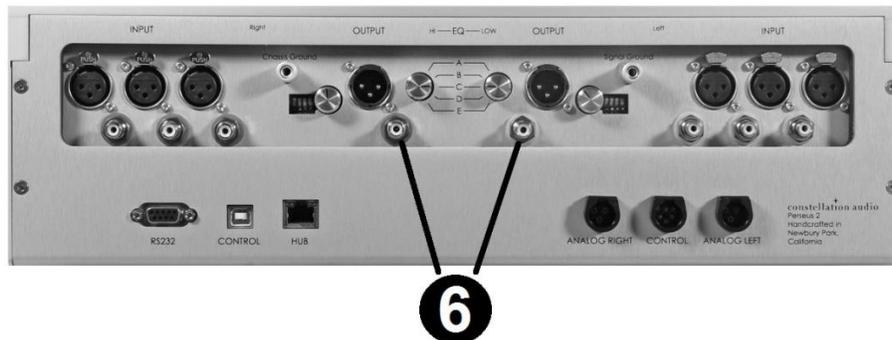


RCA unbalanced outputs are also supplied for preamplifers not equipped with XLR connections. When connecting to an amplifier, be sure to match the output to the correct channel on your amp. As you are looking at the back of the Perseus, the output on the left side is for the right channel, and the output on the right is for the left channel. To remove an RCA plug, grasp it by the connector body and pull the plug out.

## 7. Chassis ground



The chassis ground terminal is one of two ground terminals provided on the Perseus. Two separate grounds provide more grounding options and will allow you to reduce hum to an absolute minimum. Typically the chassis ground will be connected to the ground terminal on the turntable or the motor, while the other ground terminal (signal ground) will be connected to the tonearm. However, you may find that you get less hum by connecting the chassis ground to the center plate screw on the AC outlet, and grounding both the tonearm and and turntable to the signal ground. Experiment and go with whatever configuration gives the best results.

## 8. Signal ground



The signal ground terminal is one of two ground terminals provided on the Perseus. Two separate grounds provide more grounding options and will allow you to reduce hum to an absolute minimum. Typically the signal ground will be connected to the ground terminal on the tonearm, while the other ground terminal (chassis ground) will be connected to the turntable or motor. However, you may find that you get less hum by connecting both the tonearm and the turntable to the signal ground, and connecting the chassis ground to the center plate screw on the AC outlet. Experiment and go with whatever configuration gives the best results.

## Other connections on the Perseus

### 9. Power inputs



These inputs connect to the power outputs of the Perseus's separate power supply. The Perseus power supply includes permanently attached, spiral-wrapped, gold-plated copper cables designed for aerospace use. Each cable is rated to handle 30 amps.

Each of these jacks mates with a matching jack on the power supply. Be sure to connect the Analog Right power jack on the phono preamp to the Analog Right power jack on the power supply, the Analog Left power jack on the phono preamp to the Analog Left power jack on the power supply, and the Control power jack on the phono preamp to the Control power jack on the power supply.

**Before connecting these cables, switch off the Perseus's power supply and disconnect it from the AC power. Failing to do this can damage the Perseus or its power supply.**

### 10. RS-232

This DB-9 style serial connection can be used to interface the Perseus with third-party control systems such as those from AMX, Crestron and Control4. It can also be used to update the Perseus's firmware. For more information, contact your dealer.
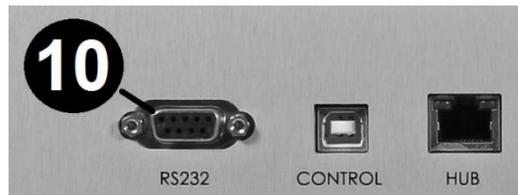


### 11. USB / control

This USB jack is used to interface the Perseus with third-party control systems such as those from AMX, Crestron and Control4, and also to update the Perseus's firmware. For more information, contact your dealer.
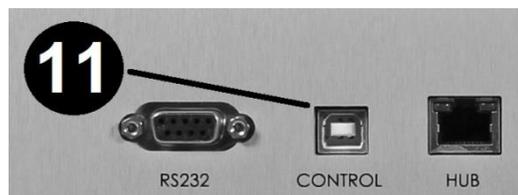


### 12. Hub

This connection is currently inactive and is reserved for future use.
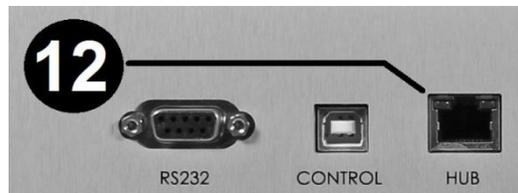
## Power supply connections



## 13. AC input

This AC input accepts standard 15-amp IEC-type power cords. You may use the high-quality power cord supplied with the Perseus, or substitute an aftermarket power cord if you wish.

## 14. Power outputs

These outputs use permanently attached cables that connect to the power inputs of the Perseus phono preamp. Constellation Audio has permanently installed special spiral-wrapped, gold-plated copper cables designed for aerospace use. Each of these cables is rated to handle 30 amps.

Each cable mates with a matching jack on the preamp. Be sure to connect the Analog Left power jack on the phono preamp to the Analog Left power cable from the power supply; the Analog Left power jack on the phono preamp to the Analog Right power cable from the power supply, and the Control power jack on the phono preamp to the Control power cable from the power supply.

Before connecting these cables, switch off the power supply and disconnect it from the AC power. Failing to do this can damage the Perseus or the power supply.

# Controls / displays / indicators

## 15 – 19. Front panel controls
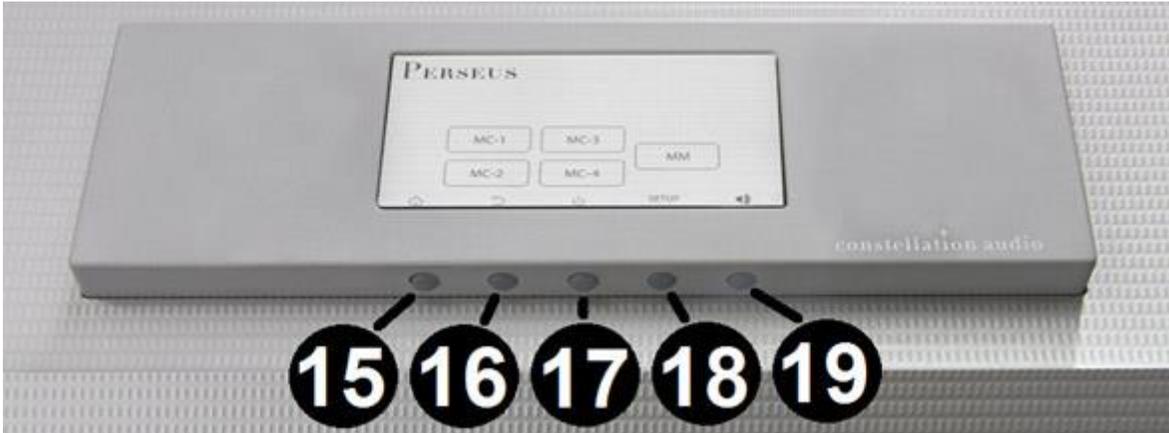


The front panel includes an LCD touchscreen and five buttons positioned underneath the display. These buttons work along with the touchscreen to provide control and monitoring of most Perseus functions. The functions of the buttons are shown using icons on the screen. Here are the functions:

## 15. Home

This button brings you to the Input Select screen no matter which control screen you are currently viewing.

## 16. Return/back

This button brings you back to the previous control screen. For example, from the MC Load screen, pushing this button will take you back to the Input Setup screen.

## 17. Standby/power

Push this button to turn the Perseus on and off. When you turn the unit on, it will take a few seconds for the power supply and preamp to warm up. When the Perseus is ready for use, its LCD screen will illuminate. Press the mute button on the Perseus to activate the sound.

When you turn the Perseus off, the unit will enter cool-down mode for 10 seconds. During cool-down, no buttons on the unit will operate.

## 18. Setup

Pressing this button will call up the Screen Setup screen, which lets you adjust contrast, brightness and timeout of the LCD screen.

## 19. Mute

Press this button to silence the audio temporarily, such as when you're lowering the tonearm onto a record. Because the Perseus uses a relay to perform the Mute function, it may take a second or so for this control to respond. When the Perseus is in mute mode, an X will appear next to the speaker icon in the lower right corner of the touchscreen. Press the button again to restore the sound.

## 20 – 23. Rear-panel controls
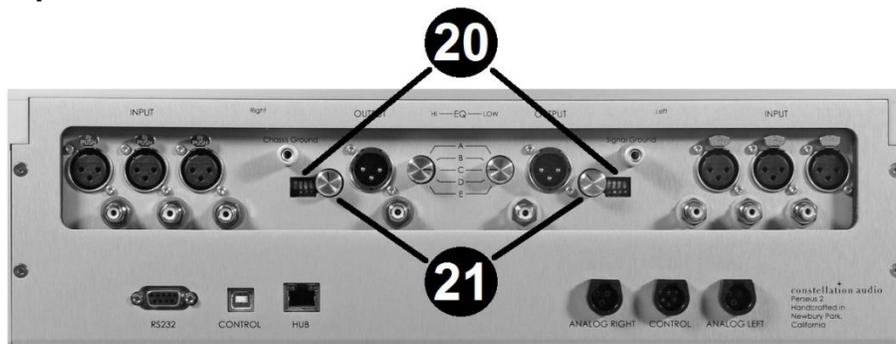


## 20. MM loading adjustment switches

These two arrays of four microswitches each adjust loading for the MM input. You can flick the switches gently with a small screwdriver, a toothpick, etc. You can use the settings recommended by the manufacturer of your cartridge, or experiment and use the settings that sound best to you. But always use the same settings on both switch arrays. Below are the functions for each switch:

**CAPACITIVE LOADING**
SW1 and SW2 off: No capacitive loading
SW1 or SW2 on: 100 pF
SW1 and SW2 on: 200 pF

**RESISTIVE LOADING**
SW3 and SW4 off: 47 KΩ
SW3 on, SW4 off: 33 KΩ
SW3 off, SW4 on: 10 KΩ
SW3 and SW4 on: not recommended
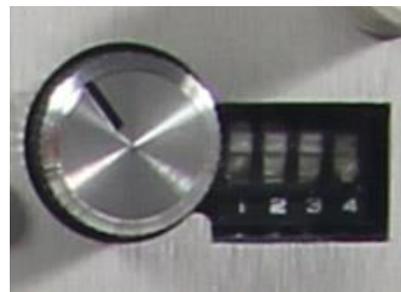


## 21. MC loading adjustment knob

Turning this knob adjusts the loading for the MC inputs in a range of 0Ω to 999Ω. To see the setting of the knob, push the Setup button the front panel and select MC Load on the touchscreen. Don't worry about getting the left and right channels to match perfectly; differences of 1 or 2 ohms are insignificant. If the load is set all the way down (000) you will get no sound.
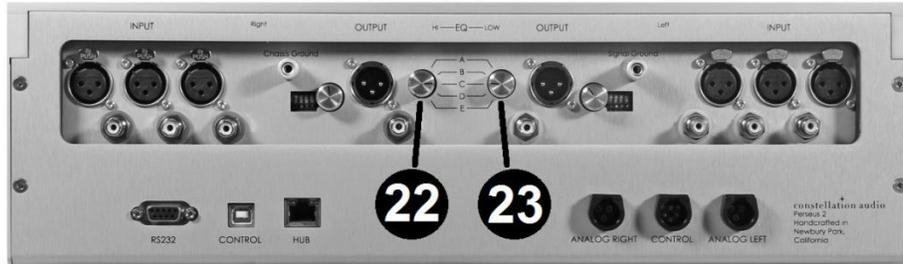
## 22. High-frequency EQ knob

This knob adjusts the response of the passive RIAA EQ circuitry at 10 kHz in ±2 dB steps. It can be used to fine-tune the sound to suit your system, your turntable, your cartridge or your taste. We recommend you start with the knob in the C position, and adjust if necessary.

## 23. Low-frequency EQ knob

This knob adjusts the response of the passive RIAA EQ circuitry at 50 Hz in ±2 dB steps. It can be used to fine-tune the sound to suit your system, your turntable, your cartridge or your taste. We recommend you start with the knob in the C position, and adjust if necessary.

# Control screens

Many Perseus functions are controlled through the LCD touchscreen. Here is how the control screens function.

## Standby screen

Touch the power button to turn the power on. If the power is off, touching the darkened screen will call up the Standby screen.
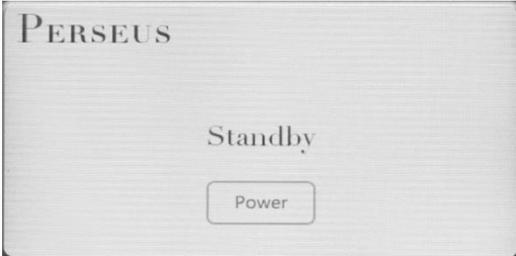
## Powering On screen

This screen appears when the power is on and the unit is warming up.
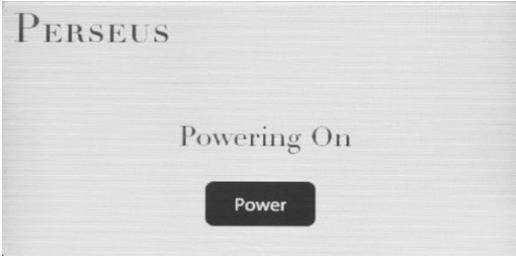
## Input screen

When the unit has finished its power-on cycle, this screen will appear. It provides selectors for the various MC and MM inputs. Pushing the Setup button from this screen enters the Screen Setup mode.
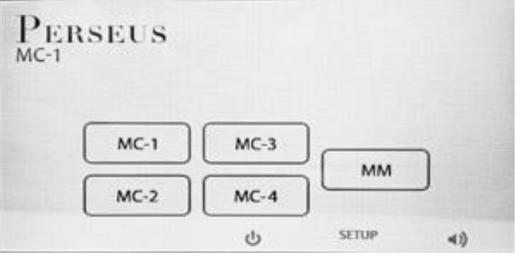
## MM Input Setup screen

When you press the Setup button on the front panel when MM input is selected, this screen will appear. It allows you to set up basic parameters for the MM input. Hit the Apply button to save changes and the Default button to return to factory settings.

To set stereo or mono operation: Press either the Stereo or Mono button. The current mode is indicated by a darkened button. In the screen at right, stereo is activated. Hit Apply to save your changes, Default to restore the factory presets.
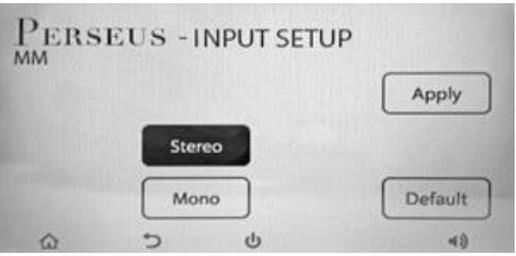
## MC Input Setup screen

When you press the Setup button on the front panel when one of the MC inputs is selected, this screen will appear. It allows you to set up basic parameters for each MC input. Hit the Apply button to save changes and the Default button to return to factory settings.



To set high or low gain: Press either the High Gain or Low Gain button. The current mode is indicated by a darkened button. In the screen at right, low gain is activated. We recommend you set this by ear, so that the Perseus has a similar output level to your other source devices. If the level is too low, select High Gain. If it is too high, select Low Gain. Touch Apply to save your changes.

To set stereo or mono operation: Press the Stereo or Mono button. The current mode is indicated by a darkened button. In the screen at right, stereo is activated. Touch Apply to save your changes.

## MC Load screen

When you press the MC Load button on the input setup screen, this screen will appear. It provides a readout of the settings of the load potentiometers on the back of the Perseus. Adjust both potentiometers so that the desired load impedance is shown on the screen. (If the two readouts differ by an ohm or two, it doesn't matter.) If the level is set to 000, you will get no sound.
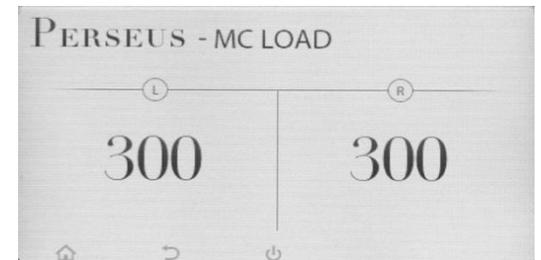


## Screen Setup screen

When you press the Setup button while on the Input Select (Home) screen, the Screen Setup display appears.

To adjust LCD brightness: Press the + and – buttons on the left side of the screen, on either side of the dark dot.
To adjust LCD contrast: Press the + and – buttons on the right side of the screen, on either side of the half-dark/half-light dot.
To adjust LCD backlight timeout: Press the Timeout button in the lower left corner to keep the screen lit for 15 sec., 30 sec., 1 min., 5 min., 10 min., and always on.
To accept or cancel screen setting changes: Press the Apply or Cancel button, respectively.
To return to the factory default settings: Press the Default button. This will bring up a screen asking "Are you sure you want to set this device to its default settings?" Hit the Yes button to go to default settings, the No button to cancel.

# Step-by-step operating process

We've covered all of the basic controls and indicators of the Perseus. Here's how you use them to perform the basic operations of turning the unit on, selecting a source, adjusting the sound, and turning the unit off.

STEP 1: Before making or changing any connections on the Perseus, turn off the master power switch on the back of the power supply, and turn off the preamp and power amplifier(s).

STEP 2: If you are using the Perseus for the first time, set the Low EQ and High EQ switches on the back panel to C.

If you are using the MM input for the first time, use a small screwdriver or a toothpick to set the MM loading switches on the back panel according to the settings recommended by the manufacturer of your cartridge. Feel free to experiment with different settings later if you wish. (See page 13 for more information.)

STEP 3: To turn on the Perseus from the front panel, push the Standby button in the middle under the LCD touchscreen. You may also tap the touchscreen to "wake it up," then push the onscreen Power button.

Whichever way you turn on the power, you will hear the Perseus's internal relays click as the unit goes into warm-up mode. In a few seconds, the front touchscreen will illuminate. The Input Select screen will then appear, with the most recently used input selected.

STEP 4: If the input you want is not selected, select the desired input by pushing one of the onscreen buttons for MC-1, MM, etc. The button for the selected input will go dark.

STEP 5: If you need to set up either of the MC inputs, push the Setup button on the front panel. Set the operation for high gain or low gain, stereo or mono, as desired.

STEP 6: If you need to adjust resistive loading of the MC inputs, push the MC Load button on the Input Setup screen. The settings of the load knobs in ohms will be displayed. Reach around to the back of the Perseus and turn the right and left adjustment knobs until the settings are correct for your cartridge. If the two readouts differ by an ohm or two, it doesn't matter. If the level is set to 000, you will get no sound.

STEP 7: If you wish to mute the output temporarily, such as when lowering the tonearm onto a record, push the Mute button. An X will appear next to the speaker icon in the lower right corner of the touchscreen. Press the Mute button again to restore the sound.

STEP 8: To turn the system off, stop playback on the source device. Press the Standby button in the middle under the LCD touchscreen. The unit will enter cool-down mode for 10 seconds, during which no buttons will work. After cool-down mode finishes, you can turn the unit back on again as described in Step 3 above.

## Maintenance

The Perseus requires no regular maintenance. If the phono preamp's surface becomes dusty, simply wipe it off with a soft dry cloth. Do not spray cleaners on the surface.

To clean fingerprints from the surface of the Perseus, spray a small amount of mild window cleaner such as Windex onto a soft dry cloth, then use the cloth to remove the fingerprints. Do not spray the cleaner directly onto the preamplifier.

## Troubleshooting

### Unit will not turn on

1. Try the following steps in order. After you perform each step, touch the Standby button on the front of the unit and wait a few seconds to see if the touchscreen illuminates. If any one of the steps restores the power (i.e., allows the Standby button to turn the unit on), there is no need to continue to the next steps.

    A. Check power cable connections between the wall and the Perseus's power supply. Push the wall plug and the connector at the power supply in firmly.
    B. Check power cables between Perseus and power supply. DO NOT pull out these cables while the power supply is on.
    C. Make sure the master power switch on the rear of the power supply is turned on.
    D. If the Perseus is plugged into an AC line conditioner, make sure the line conditioner is turned on.
    F. Flip the master power switch off and on again. This will reset the Perseus's internal circuit breaker.
    G. Check the circuit breaker for the AC circuit that the Perseus is plugged into. If the breaker is tripped, flip it back on. If it will not turn on, there is likely a short circuit somewhere in the lines or in a device connected to this AC circuit. Check the power cords for your components to make sure none have been damaged.
    H. If none of these conditions restores power, it is possible one of the Perseus's internal fuses is blown. Do not attempt to change the fuse yourself—the Perseus requires the use of special high-voltage fuses that are not commonly available. Contact your Constellation Audio dealer for service.

### Unit is on but no sound is produced

1. Try the following steps in order. If any one of the steps restores the sound, there is no need to continue to the next steps.

    A. Check you are on the correct input. Cycle through available inputs using the front touchscreen controls. Remember that MC-1 and MC-3 are for XLR inputs, and MC-2 and MC-4 are for RCA inputs.
    B. Check that the turntable is on and that the stylus is contacting the surface of the record.
    C. Check the speaker icon in the lower right corner of the touchscreen. If there is an X next to the icon, the unit is in mute mode. Press the Mute button directly beneath the speaker icon to restore the sound.
    D. If one of the MC inputs is selected, push the Setup button under the LCD display, then push the MC Load button on the LCD screen. If the resistive load is set to 000, turn the back-panel MC load adjustment knobs to bring the loading up to the recommended resistance in ohms for your cartridge.
    E. Check the connections between the turntable and the Perseus, and between the Perseus and the preamp. If a cable is disconnected, reconnect it. If this does not restore sound, try substituting a different set of cables in order to make sure the original set was functioning properly.
    F. Check the connection between your amp and the speaker. Make sure the speaker cable has not come loose. If it has, turn the power off on your amp, then re-install the cable.
    G. Check that the volume is at a sufficient level. Do not turn the volume all the way up to check this, as if sound is reestablished while the preamp is set to output maximum volume, damage can be done to your speakers and amplifiers.
    H. If none of these actions restores the sound, contact your Constellation Audio dealer.

## Sound comes from the wrong speaker
If left-channel sounds are coming from the right or vice-versa (i.e., the violins in an orchestral recording come from the right speaker, not the left), check the cable connections between the turntable and the Perseus, between the Perseus and your preamplifer, between the preamp and the amplifier, and between the amplifier and the speakers. Make sure left-channel cables are connected to the left channels, and right to the right channels.

## Only one speaker is working, or one speaker is playing a different piece of music
1. Check each cable, starting with the turntable. Make sure the left channel of the turntable goes to the left input on the Perseus (which is on the right side, as you're looking at the back panel), and the right channel to the right input (which is on the left side). On the back of the Perseus, the left and right inputs are NOT next to each other. They are on opposite sides of the unit. In other words, the XLR input numbers are 1, 3, 3, 1, the RCA input numbers are 2, 4, 4, 2.
2. Check to make sure the cables between the Perseus and the preamp are connected correctly.

## Excessive hum is heard
1. Check to make sure the ground cables between the turntable and the Perseus are firmly connected.
2. Experiment with various ground connection configurations to see which produces the least hum. The recommended default configuration is to run the tonearm ground to the signal ground connection on the Perseus, and the turntable/motor ground to the chassis ground on the Perseus. If this produces excessive hum, try grounding both the turntable and the tonearm to the signal ground, and connect the chassis ground to your house ground by wiring it to the center plate screw of the AC outlet.

## For more information

Your Perseus phono preamp should give you many years of trouble-free, maintenance-free service. If you encounter any problems you cannot solve or have technical questions, please contact your Constellation Audio dealer.

For more information about Constellation Audio products, please visit our website:

www.constellationaudio.com

**constellation audio**
Simply. Light Years Ahead.