

Trouble shooting for dummies

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Pre-Amplifiers

Within the Pass Labs pre-amplifier family we typically see two installation errors, both involving cable issues. The most common error concerns improper sequence of cable connection for our pre-amplifiers with dedicated outboard power supplies. The last cable attached to these preamplifier products must always be the power cord. Attach these cables out of sequence and the logic circuitry in these particular products may cause them to self protect.

The power cord must be plugged into the power supply chassis after all other cables are attached and lastly plugged into mains power. If you have done this out of sequence, and the preamplifier does not work, simply unplug the power cord from the wall, wait a couple of minutes and plug the power cord back in.

In a like fashion, electrical disturbances on the power line may cause the pre-amplifier to self protect and shut down. Should this happen, unplug the pre-amplifier's power cord from the wall, wait a few minutes and then plug the power cord back in. If this happens often it may be an indication that large voltage transients are being routinely delivered to your location via the utility company. The Pass Labs products are designed to survive these electrical faults, your major home appliances and many of your entertainment electronics likely do not have such protection.

The second issue is an apparent lack of performance when using single ended (un-balanced) interconnects. When using single-ended interconnects on inputs that additionally have associated XLR inputs it is necessary to install the supplied jumpers between pins one and three on the input XLR. The pre-amplifier will function sans jumpers, but performance will be notably diminished. Neglecting to install the jumpers will not harm the pre-amplifier. Never apply jumpers to the output connectors.

Power-Amplifiers

In the Pass Labs power-amplifier family we typically see two operational errors as well. The most common error is forgetting to install the jumpers on the input XLR's when running un-balanced (single-ended) inputs. The power-amplifier will function sans jumpers, but power, performance and sonics will be significantly diminished. Neglecting to install the jumpers will not harm the amplifier in any way.

A more infrequent but common error concerns the misuse of the remote turn on connections located on the rear panel of Pass Labs power-amplifiers. From the front panel *standby / on control*, "on" is always on; irrespective of the rear panel remote trigger status. If you wish the remote trigger to control the amplifier then you must first set the front panel control to "standby". If the remote trigger is operating the amplifier, the amplifier cannot be put in "standby" from the front panel switch. From the rear panel remote trigger "off" is always off, irrespective of the front panel *standby / on control* status. Simply put, you can always turn the power-amps on from the front panel and always turn them off from the rear panel. The supplied voltage for the trigger is to be 12 volts direct current. Positive 12 volts will connect to the red binding post marked "external turn-on, and negative 12 volts will connect to the black binding post marked "external turn-on".

It doesn't work..... what shall you do?

- 1) No sign of life
 - a) Are the voltage and wattage requirements of the product compatible with the supplied power? Are you sure, if not check the power requirement label on the product.
 - b) If yes, is the product properly plugged in to mains power?
 - c) If yes, check the mains outlet with another device, such as a lamp?
 - d) If yes, substitute another power cord and check the product fuse or breaker as necessary?

- e) If yes, does the unit have a “remote”/ “local” power-up option?
 - f) If yes, make sure this option is in the local mode?
 - g) If yes, is the product in standby mode?
 - h) If yes, change status of product to operational “on”.
- 2) Lights on nobody home
- a) Standby annunciation showing “on”?
 - b) Product properly set for “local” or “remote” control as required?
 - c) If yes, select operational “on” with local or remote as appropriate.
 - d) If yes, check other associated controls (input, output selections, mute, bypass loops, gain settings and etceteras)
 - e) If yes, check for proper input and output connections.
 - f) If yes, check cable, for proper electrical contact.
 - g) If yes, input signal present?
 - h) If yes, is input signal at appropriate level?
- 3) When all else fails.....
- a) Re-read the instruction manuals.
 - b) Take a break.
 - c) **Re-read the instruction manuals!**
- 4) Back to basics
- Starting with the most downstream component, (Within the normal playback system, this will usually be the loudspeakers) verify operational status and correct connection by direct substitution of working components.
- a) Power up your loudspeakers with another source. If your loudspeakers are passive devices, you may check the woofers only (assuming they are not an assisted design) with a single 1-1/2 volt battery. If they are assisted, you will not hurt anything, but series capacitance will block any DC current flow through the speaker voice coil, negating the value of this test. If the woofer is operational you should see the cone move when you apply or remove voltage.
 - b) If yes, substitute another speaker cable, known to be good or repeat the battery test on any suspect speaker cable.
- c) If yes, go to the next component upstream in the signal path, usually the power amp.
- 5) Repeat as necessary; For example
- a) Check each channel of the power amplifier using steps 1 through steps 3.
 - b) If yes, check input to power amplifier by substituting known cables, interchange right and left inputs to the power amplifier.
 - c) If no change, substitute an input source component which is known to be good.
- 6) Move upstream one component and methodically do-loop the outlined testing, thus verifying the proper connection and operational status for each component.

Follow a logical sequence of checking all components and their connections one at a time. Always start your checking at the most downstream component in any signal chain. Check all channels of a system, one functional channel may serve as a useful tool to investigate non-functional channels. Follow a logical and comprehensive check. Assume nothing, check even the most mundane component in the chain. Substitute working components as a diagnostic tool whenever possible. Read the operational instructions and suggested interconnection for each product. Be aware there are often several ways to integrate a component into a signal chain. If you are mixing pro audio and consumer audio products, be aware that different standards for signal levels apply within the two industries. Pro audio components and consumer audio components are not always a happy mix due to the different level and impedance standards.

Be aware of noise generated by ground loop issues when interconnecting audio devices. Audio/video systems are very susceptible to ground related noise issues, and require some care to configure for low noise figures.

If your testing involves a turntable, make sure the phono-cartridge output and loading requirements are compatible with the phono-stage preamplifier input and cable.

Some products auto-protect during various fault conditions, such as over temperature, over and under

voltage, over current or inappropriate load. Other products power-up only in the presence of an input signal. Be aware of these and other peculiarities or unique operational traits of your equipment. Owners manuals are a great source of information..... often forgotten once you have lived with product for a period of time.

As for example the Pass Labs microprocessor control preamplifiers will self protect in the event of surges, spikes and other anomalies on the power line. The Pass Labs microprocessor controlled preamplifiers will also self protect if you install power cables in the incorrect order. To reset the software and restore normal operation on this product it is necessary to unplug the preamplifier's mains power cord for several minutes.

Always be aware that if an electrical product has failed, potentially hazardous voltages may be present at unexpected places on the product. Make safety your first priority.

We are here to assist..... give us or your dealer a call if you ever experience problems with your Pass Labs products.

Speaker Cables and Interconnects

By a large margin the most common question we receive concerns cable choice. Many people find the whole cable issue and the plethora of cable choices quite confusing.

We have a few thoughts on cables the most important being they should cost a lot less than the equipment they serve, and contain at least some conductive material. Making specific recommendations is difficult if not impossible, but we can offer some suggestions.

For interconnects we usually suggest balanced cables for their inherent noise rejection ability. Shielded cables are almost universally preferable. Unbalanced cables should always be shielded.

Speaker cables should be only as long as necessary. We prefer cables that are short and stout, oxygen free copper and silver are the suggested materials. (If you ever find some really exceptional cables made of gold,

please gift us a couple hundred feet.) If you are using monoblock amplifiers, place the amps right next to the speakers and take advantage of the ability to shorten the cables up even more.

Speaker cables should be firmly tightened down at the speaker output terminals, but not with a wrench. Output terminals will not withstand the levels of torque that may be easily applied by wrench. Hand tightening without excessive force is plenty. Cleaning contact surfaces with one of the commercially available electronic contact cleaners should be part of your annual system maintenance.

We have found the majority of cable product in the market in fact performs quite well. The vast majority of unsatisfactory sounding cable is an artifact of dirty or poorly made up connections. Often new cable sounds better simply because the connections are clean and tight. In reality you may well be hearing bad sounding connections, and we recommend that attention be paid to cleanliness of electrical contact surfaces and proper connector fit. Obtain some contact cleaner and make connector cleaning part of your yearly maintenance schedule.