PASS™

XP-12 Owner's Manual - DRAFT

For your protection please read the following:

Water and moisture: Electrical devices should not be used near water (as per example, near a bathtub, washbasin, kitchen sink, laundry tub, wet basement or swimming pool). Care should be taken such that objects do not have the opportunity to fall, and that liquid is never spilled onto or into the device enclosure through openings.

Power Sources: An electrical device must be connected to a mains power source in strict accordance with the supplied product owner's manual. Please verify that the AC mains voltage specified in the product manual matches those requirements indicated on the unit and the AC voltage provided to your location by the power company.

Grounding: Adequate precautions should be taken so that the grounding provisions built into an electrical product are never defeated.

Power Cords: Pass Laboratories provides a power supply cord that meets all legislated requirements for the market in which the product was originally sold. If you choose to substitute an after-market product we urge you to choose one that is fully safety rated by the necessary local authority.

Power Cord Protection: Power supply cords should be routed so that they are not likely to be walked on, abraded, or pinched by items placed on or against them, paying particular attention to cords where they enter plugs or exit from a device. Never under any circumstance insert a cut or damaged power cord into a mains power socket.

Power and Signal: Cables should never be connected / disconnected with equipment powered up. Failure to heed this warning may damage or destroy equipment.

Ventilation: Power-amplifiers run hot, but you should be able to place your hands on them without discomfort. You must allow for this heat in installation, by providing for free air circulation around the product. Electronics should not be subjected to sources of excessive radiant heat. Excessive heat can shorten the life of the product and may cause the electronics to self-protect and shut down.

Servicing: To reduce the risk of fire, electrical shock or other injuries, the user should not attempt to service the device beyond that which is described in the operating instructions. All other servicing must be referred to qualified service personnel.

Introduction:

At Pass Labs we don't change our products unless we feel that the changes are significant improvements over previous versions. Because of this we see typical product life spans of seven to eight years.

We are constantly working on and listening to new things and increasing our knowledge of circuits and components on sound. Eventually we find some things worth putting into production because they are significant enough. That time has come with a new series of preamplifiers.

The new XP-12 starts with a new power supply. It uses an efficient toroidal design with both an electrostatic and Mu metal shield along with vacuum impregnating and epoxy fill. This gives us a very quiet transformer both electrically and mechanically.

The power supply circuitry itself is also lower noise and has additional filtering, a little more complicated but worth it.

The XP-12 uses the single stage volume control borrowed from the XS line preamp. This gives us one hundred 1 dB steps with lower noise and distortion while removing some signal path parts.

The gain circuitry continues to use our favorite transistors from Toshiba but has a larger higher biased output stage similar to the XS preamplifier auto bias. This makes longer and multiple cable runs easier to drive and gives us the advantage of simplifying our single ended output circuitry while increasing performance.

Overall this makes for a quieter more neutral, musical and versatile control center for your system.

Setup:

Please read and understand the operational instructions and safety issues associated with this product. We go through great effort to make a soundly engineered, and supurbly performing product of lasting duribility.

We understand that things infrequently go wrong, if you have any questions or problems please contact either your dealer or the factory, we are here to support the product and you, the user.

As with all audio electronics the power cable should be the last thing attached and the first one removed any time you hook up or remove equipment from the signal chain.

The preamplifier's voltage and current rating are indicated by affixed tag on the rear of the preamplifier. The preamplifier typically draws 10 watts during operation. Please verify that the indicated voltage requirement of this preamplifier is consistent with the utility voltage at your location.

We have provided a standard IEC AC power cord that fits into the IEC 320 line receptacle at the rear of the preamplifier chassis. The preamplifier is equipped for operation with an earth ground provided by the users AC outlet. Do not defeat this ground.

There are a total of five inputs. Two of the five inputs are balanced XLR only. The other three inputs are single-ended only. There are two pairs of outputs available with identical gain structure. One pair Balanced, one pair single-ended.

Balanced inputs and outputs are via XLR connectors. Single-ended inputs and outputs are via RCA connectors. On the XLR connectors, pin 1 is grounded, pin 2 is the positive signal, and pin 3 is the negative signal. Left channel RCA connectors are marked with "L". Right channel RCA connectors are marked with "R". In a similar fashion balanced XLR inputs and outputs are marked with "L" for left and "R" for right channel.

The main outputs are located at the left-hand side (viewed from the rear) of the rear panel, two male XLR connectors, and two RCA connectors, "R" (right) and "L" (left). The RCA connector's ground is in parallel with pin 1 of the XLR outputs and the RCA hot is fed from an independent summing junction that maximizes the X circuit benefits. The RCA, single-ended, outputs are buffered from the balanced outputs. You may use both the single ended and balanced outputs at the same time. On the XLR, pin 1 is ground, pin 2 is positive, and pin 3 is negative.

Operation:

In use the XP-12's front panel controls and alphanumeric display are quite straight forward, and intuitive. We encourage you to become familiar with their operation prior to establishing any input connections with this unit.

After the all the inputs and outputs are connected and double checked, you can now turn on the preamp by means of the power switch located next to the AC inlet.

The left most button on the front panel is Mute. Pressing this button toggles between mute on and mute off. Mute on removes signal from the output of the preamp.

The front panel mode switch cycles the preamplifier display through 2 different levels and off. These two functions are as follows: Bright, Dim and Off. Using any functions with the display "off" will momentarily bring the display back up to its dim setting.

The two Select switches (designated by left and right pointing arrows) then alter the displayed active input, 1 through 5.

Input 5 is unique in that it is linked with the Home Theater (Unity Gain) function. (The HOME THEATRE FUNCTION is discussed at length later in this manual.) The two select arrows logically control selections of the various inputs to the preamplifier.

Before selecting the theatre pass through (pass thru) option, it is imperative that the input device on input number 5 has its gain set to minimum. Failure to follow this precaution could result in a volume level intolerable to both ears and speakers. (The standard 2 volt source component, with the pre-amp set to 0 dB, will drive most power amps to full rated output.)

As an added precaution when "pass through" is selected the volume ramps upto 75. This is to prevent nasty surprises when "pass thru" is selected accidentally. The ramp up sequence can be stopped at any time by hitting any button on the remote.

The theater pass through function bears special attention, this function is only available as direct access through the hand held remote control. This function is associated only with input number 5 and has two positions selected with the "pass thru" button on the remote; those two positions, on and off. This function is useful in that it allows the preamplifier to function as a unity buffer (0dB gain at volume step 75) for use with components that best function with their own volume controls, such as surround processors.

When the right-front and left-front outputs of the processor are routed through input 5 of the XP-12 (with the gain of the XP-12 set for Unity), the volume will be under full control of the processor and the XP-12's action will be totally transparent. When the user chooses this setting the software sets the XP-12's gain to the unity gain setting, regardless of how it was previously configured.

When at Unity both left and right level controls on the XP-12 will have a displayed value of 75 (0 dB), and any previous balance settings will be set-aside into a temporary registry. Both of these default conditions are intentional, and intended to make the most advantageous use of your source electronics. You may also set any input to unity (0 dB) by selecting low gain and setting the volume at step 75.

We have designed this product, so that the volume setting of the preamplifier will always revert to the values in the temporary register as you exit from Pass Through. With the rarest of exceptions this is a very safe transition, very infrequently will the normal chosen level be higher than 0 dB.

The electronic volume control allows greater than 70 dB range and is driven by a micro-controller that reads the optical encoder serving as a front panel volume control. In this manner tracking of the volume of the two balanced channels is possible with accuracy unavailable on any ordinary volume control, assuring precise level steps and high common mode rejection in balanced circuits.

Wayne Colburn's exceptional volume control in conjunction with the fluorescent display gives the user ability to replicate volume levels with absolute accuracy in steps of roughly 1 dB.

The remote control uses multi-button direct access architecture. This remote is designed to operate several pieces of Pass Labs electronics, not all of the functions available on this remote will be applicable to your Pass Laboratories XP-12.

The Remote control operation is, or should be very intuitive in operation; we have attempted to make its operation as familiar as possible. Where applicable the remote mirrors the front panel controls.

Power, tape and ext. amp on (external amplifier turn-on) are not used with the XP-12. These specific control functions are for other products and have no effect on this product.

MUTE: pressing mute once will quiet the pre-amplifier outputs; pressing mute a second time will return you to the previous volume control setting

INPUT SELECTION: Pressing. 1,2,3,4,5 will immediately move the input selection to that input selection; volume and balance settings will not be disturbed.

BALANCE: Pressing balance left (<) or balance right (>) will increase the level in the left or right speaker, depending upon which button is pushed.

VOLUME: Pressing the increase (^) button or the decrease (v) button will shift the volume setting 1dB, holding a button down will increase or decrease the level until such time as you either release pressure on the button or reach the limits of the volume control.

PASS THRU: Pushing this button twice, sets the pre-amplifier to volume step 75 (0 dB) and input 5. As an added precaution when "pass through" is selected the volume ramps upto 75.

This is to prevent nasty surprises when "pass thru" is selected accidentally. The ramp up sequence can be stopped at any time by hitting any button on the remote.

The button must be pressed again to exit "Pass Thru" and unlock the other command selections.

DISPLAY: The default setting for the display is "bright", pressing the display button once changes the display to its "dim" or "low intensity" setting, pressing the button a second time selects "off" for the display. When "off" is selected any other control function will cause the display to indicate product operational status for approximately 7 seconds and then the display will once again blank. Pressing the display button a third time cycles back to a "bright display"

We recommend the use of the balanced output mode where possible. Balanced input to power-amplifiers will typically retain the character of the input mode, but offers less distortion, less noise, more gain, and more voltage swing, without compromising the sound.

With balanced operation, the common mode rejection of the preamp reflects the intrinsic common mode rejection of the topology, the matching of the gain devices, and the matching of the attenuator channels. In this case we have been able to keep the total mismatch to about .1%, for a common mode rejection of approximately -60 dB.

The input system of the preamplifier will exhibit full common mode noise rejection with passive balanced sources, where the negative input is connected to ground at the source through the appropriate source impedance. This allows adaptation of

unbalanced sources to balanced operation with passive cable connections in a manner that achieves the noise rejection of active balanced sources.

The use of a micro-controller allows all of the preamplifier functions to be repeatable and accurately controlled. The micro processor only controls the functions of the preamplifier. At no time does any of the input or output signal come into contact with the digital control signals. The digital circuits are powered by a power supply that is isolated from the analog supply. Should it ever be necessary to update the software that controls the functioning of the preamp only the socketed micro processor need be changed.

Muting relays, which delay connection during turn-on and shut off the output when insufficient power supply is available to maintain regulation, guard the output of the preamplifier and offer protection to the power-amplifier and loudspeakers.

Specifications:

Gain:	9.3dB balanced
Frequency Response:	10Hz - 20KHz +/- 0.05 dB -1 dB at 100KHz
Crosstalk:	>100dB
Residual Noise:	15uV 10 - 30K Hz
THD:	< 0.001 @ 1V 1KHz

Warranty Information

We go through great effort to make a soundly engineered, and supurbly performing product of lasting duribility. But we also understand that things infrequently go wrong, if you have any questions or problems please contact either your dealer or the factory, we are here to support the product and you, the user.

All Pass Laboratories products purchased new from an authorized Pass Laboratories dealer in North America are covered by a transferable, limited 3-year warranty. This warranty includes all parts and labor charges incurred at the factory or factory specified repair facility, exclusive of any subsequent or consequential damages. Damage due to physical abuse is specifically excluded under this warranty.

For this warranty to apply the customer is responsible for returning the product unmodified to the factory within the specified warranty period. The customer assumes all responsibility for shipping and insurance to and from the factory or a factory specified repair facility. The conditions and stipulations of this Pass Laboratories warranty only applies to units originally sold new through an authorized dealer. Warranty on factory repair is 60 days and covers only the scope of the original repair.

Non-North America customers should consult with their original Pass Labs dealer or distributor for warranty repair instruction prior to contacting the factory or shipping product to the factory for repair.

Non-North American product must be returned to the country of origin for warranty service. Foreign distributors are only required to offer warranty service on Pass Laboratories product that they have imported, verifiable by serial number.

Please note: Conditions of warranty service and customer rights for product purchased outside the United States may vary depending upon the distributor and local laws. Please check with your local distributor for specific rights and details.

Any modifications to Pass Laboratories products that have not received written factory approval nullify all claims and void all provisions of the warranty and liability by the maker or authorized distributor. Should a modified product be returned to the factory for repair the owner will be required to pay all necessary charges for the repair in addition to those charges required to return the product to it's original configuration.

In the case of safety issues, no product shall be returned to the customer without those safety issues being corrected to the most recent accepted standards.

Removal or alteration of original Pass Labs serial numbers voids the factory warranty. Product with altered or missing serial numbers will be suspect as counterfeit or stolen product.

Pass Laboratories will not repair or in any way indemnify any counterfeit or cloned product. Pass Laboratories does not offer products in voltages intended for international markets either to authorized Pass Labs dealers or to third parties located in the United States or Canada.

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