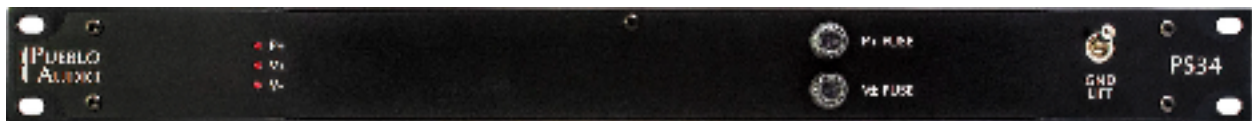


# PUEBLO AUDIO

## User's Manual for models PS34, P4, JR4 & JR2/2



[www.puebloaudio.com](http://www.puebloaudio.com)

vox/txt: 626.755.7210

The Microphone Preamplifier System (Models: PS34, P4, JR4, and JR2/2) meets the Class B specification limits defined by Code of Federal Regulations Title 47, Part 15.

## WARNINGS

**CAUTION:** To reduce the risk of electrical shock, do not remove the cover. No user serviceable parts inside; refer servicing to qualified personnel.

**WARNING:** To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture.

**POWER WARNING:** AC voltage ratings for electrical power vary from region to region. Severe damage to your unit is possible if your unit is not configured for local power. The equipment should be connected only to a power source of the same voltage and frequency as that listed on the rear panel, near the power cord entry point.

- CAUTION: Slide/rail mounted equipment is not to be used as a shelf or workspace.
- Never touch the AC plug with wet hands.
- Do not use this equipment in damp areas or near water.
- Avoid damaging the AC plug or cord and potentially causing a shock hazard.
- If liquids spill into or onto the unit, disconnect the power and return for service.
- Power cords should be arranged so they do not interfere with the movement of objects in the room: people, fan blades, utility carts, etc.
- Do not defeat or modify the grounding or polarization of the AC cord.
- Unplug the AC cord when the unit is unused for long periods of time.
- To avoid potential damage to your unit, only use in areas where proper ventilation and moderate temperatures are assured
- The user should not attempt to service the equipment. Refer to qualified service personnel.

## PS34 • Central Power Supply Unit



**INTRODUCTION:** The Pueblo Audio PS34 power supply provides 160 watts of linearly regulated DC power. It can power from one to four Pueblo Audio products (16 channels max.). It will operate reliably under significant ac service voltage sag due to brown outs.

**LOCATION:** The PS34 is an external, centralized power source. This beneficial arrangement allows heat, vibration, and residual emi of the power supply to be placed at a distance from sensitive audio circuits. It is recommended that the PS34 be located as far away from other audio devices as is practical.

The PS34 is a high power unit, much like a speaker power amplifier. The same thermal precautions taken with power amplifier operation should be adopted. Heat dissipation relies on convection cooling. Care should be taken to insure the unit is kept in a well-ventilated environment to avoid overheating. At least one rack space should be kept free above and below the unit when installed in a rack.

**AC INPUT (US):** 115Vac, 50-60Hz, 0.50A.

**AC INPUT (EU):** 230Vac, 50-60Hz, 0.25A

**DC OUTPUT:** Four 5-pin female XLR connectors are located on the rear panel. Used in conjunction with Pueblo Audio DC power cables, connects DC power to individual Pueblo Audio products (P4, JR4, JR2/2, and GM2).

**WARNING:** Never connect more than four products to the PS34 or the power capacity may be exceeded. Do not modify or make dc power cords that split, mult, or 'y' power distribution. Do not power other third-party products, damage may occur. Only designed for use with Pueblo Audio products.

**POWER INDICATOR LEDs:** Three light emitting diodes indicate power status:

**P+** indicates the positive high voltage is on for the precision phantom networks.

**V+** indicates the positive bipolar voltage is on for amplifier powering.

**V-** indicates the negative bipolar voltage is on for amplifier powering.

**FUSES:** Two 20x5mm, 1Amp slo-blo fuses (T 1A L 250V) on front panel.

**CAUTION:** for continuous protection against fire, replace with same type and rating fuse.

**P+** fuse for the independent precision phantom network supply.

**V±** fuse for the independent bipolar amplifier supply.

**GROUND LIFT:** A toggle switch on the front panel connects/disconnects the DC common/signal ground from the PS34's AC Safety Ground. This may alleviate ground 'loop' problems under certain interconnect configurations. The DC common is 'lifted' when the switch is in the up position.

Please note that the PS34's chassis is always connected to the third pin safety ground of the AC plug. If the PS34 is mounted in the same rack with other devices, their chassis grounds will be connected via the rack rails, defeating the ground lift switch's function.

## P4 • Quad Precision Phantom Network



**INTRODUCTION:** The 4 channel Precision Phantom Network™ renders power for unimpaired microphone operation. Each channel of the P4 has a stable, high current, independently regulated supply. This eliminates signal cross-coupling, improving channel isolation and imaging. Precision matched componentry maintains tight impedance balance for greatest signal yield and lowest noise.

The P4 is the perfect companion product to our JR4 dc-coupled mic preamp. However, the P4 can be used with any mic preamp for improved audio fidelity. This is because it is the *microphone's* performance, rather than the preamp, which benefits from the P4. This improvement then flows through the remaining signal chain. Please try for yourself!

**DC POWER INPUT:** A single 5-pin male XLR connector is located on the rear panel. Use in conjunction with a Pueblo Audio DC power cable to connect to the PS34 power supply.

**WARNING:** Do not modify or make dc power cords that split, mult, or 'y' power distribution. Do not power from third-party products, damage may occur. Only designed for use with Pueblo Audio products.

**POWER INDICATOR LED:** Light emitting diode on left of front panel indicates unit power status:

**PHANTOM POWER ON /OFF SWITCH:** Energizes each channel's phantom power voltage regulator. Note that this switch is not in the audio signal path. The regulation circuit output is always in-circuit. When using non-phantom powered devices, please patch around the phantom channel and connect directly to the preamp input.

**PHANTOM POWER ON /OFF LED:** Light emitting diode indicates on/off status for each channel.

**\*NOTE:** The above P4 information also applies to the Precision Phantom Network channels of the JR2/2. Since each channel is an independent module, short xlr interconnects are required to connect to a preamplifier channel.

## JR4 • Quad Microphone Preamplifier



**INTRODUCTION:** Four DC-Coupled, transformerless preamplifiers. Ideal for ribbon, dynamic and tube microphones. Also useful as DI preamp, Passive EQ/Compressor gain make-up, etc. Outstanding imaging and ambiance retrieval. Ultra-Low noise. Virtually overload proof. All unnecessary features and components omitted for signal path purity.

**DC POWER INPUT:** A single 5-pin male XLR connector is located on the rear panel. Use in conjunction with a Pueblo Audio DC power cable to connect the PS34 power supply.

**WARNING:** Do not modify or make dc power cords that split, mult, or 'y' power distribution. Do not power from third-party products, damage may occur. Only designed for use with Pueblo Audio products.

**MICROPHONE INPUT:** Female XLR. DC-coupled,  $3,000\Omega$  balanced input. Protected against phantom power faults. Capable of accepting line level signals. The input is virtually overload proof, eliminating the need for pads. Pin 2 is non-inverting (+/hot), Pin 3 is inverting (-/cold).

**MAIN OUTPUT:** Male XLR. DC coupled,  $100\Omega$  balanced output. Symmetrical signal drive. Capable of driving a  $10,000\Omega$  load to +29dBu, or  $600\Omega$  to +27dBu, before distortion rises. Will drive hundreds of feet of cable. Pin 2 is non-inverting (+/hot), Pin 3 is inverting (-/cold).

**AUXILIARY OUTPUT:** 1/4" TRS jack. DC coupled,  $100\Omega$  impedance-balanced (aka quasi-balanced). Single-ended drive on TIP of jack. 6dB less gain than the Main Output. This is an independently buffered output, not a 'mult' from the Main output.

If a Tip-Ring-Sleeve (TRS) 1/4" plug is inserted, an impedance balanced connection is formed. This allows the common mode rejection (CMR) of a differential receiver to reject noise and emi. If a Tip-Sleeve (aka TS or mono) plug is inserted, then a traditional unbalanced connection is formed.

**POWER INDICATOR LED:** Light emitting diode on left of front panel indicates unit power status:

**GAIN:** 24-Position rotary switch (2.5dB per step) for exact, resettable gain.

- Minimum Gain: +7.5dB (6 o'clock position)
- Maximum Gain: +65dB
- Gain Settings: +7.5, 10, 12.5, 15, 17.5, 20, 22.5, 25, 27.5, 30, 37.5, 40, 42.5, 45, 47.5, 50, 52.5, 55, 57.5, 60, 62.5, 65dB.
- Interchannel Matching:  $\pm 0.1$ dB (any channel, any box, any gain setting)

**CMRR @ 50Hz:** 110dB [gain = +60dB]

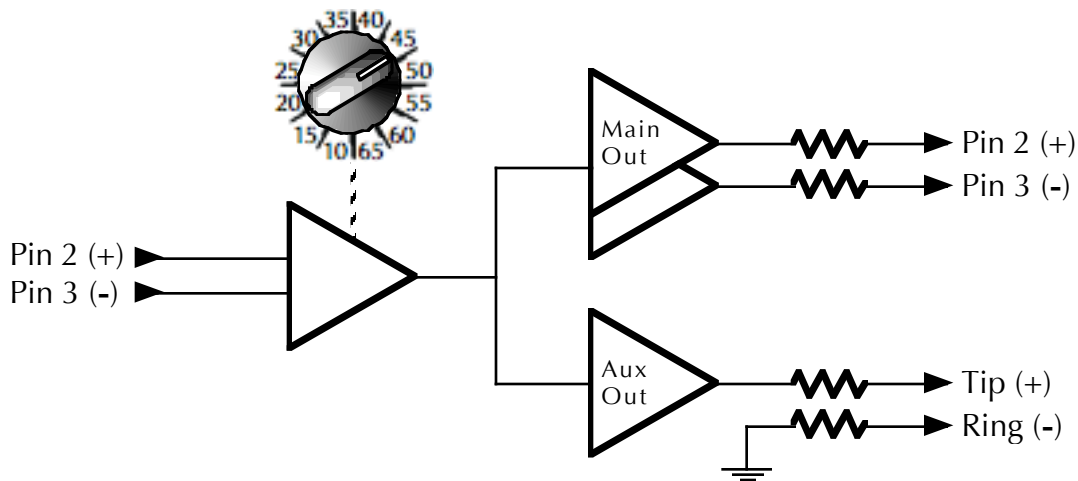
**CMRR @ 10kHz:** 100dB [gain = +60dB]

**Maximum Input:** +21dBu [gain = +7.5dB]

**Max. Output into 10k $\Omega$ :** +29dBu [ $\leq 0.004\%$  thd]

**Max. Output into 600 $\Omega$ :** +27dBu [ $\leq 0.004\%$  thd]

**High Frequency Limit:** 300kHz [+0/-3dB, gain = +60dB]



### **BLOCK DIAGRAM**

**\*NOTE:** The above JR4 information also applies to the mic preamp channels of the JR2/2.

## JR2/2 • Two Channel Phantom/Preamp Combo



**INTRODUCTION:** Two DC-Coupled, transformerless preamplifiers with two Precision Phantom Networks in one package. All the properties described earlier in this manual regarding JR4 & P4 apply to the JR2/2. The quality and performance are the same. For utmost purity and flexibility the phantom and preamp channels remain independent. Short xlr interconnects are required to connect to a preamplifier channel.

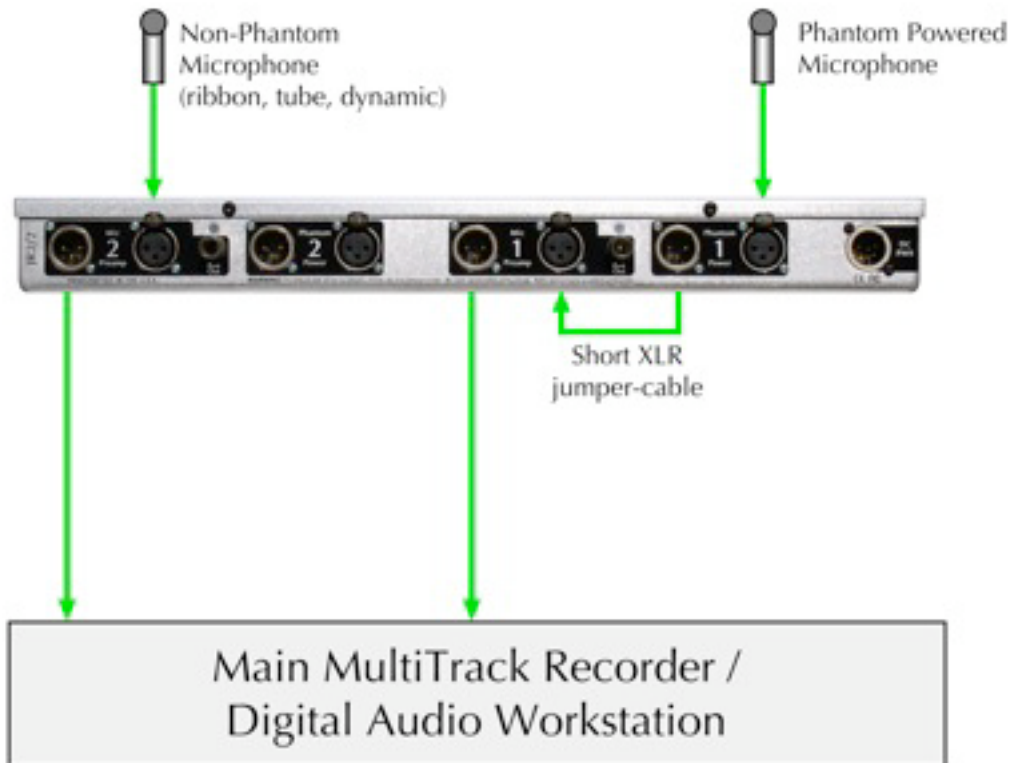


Diagram showing how to interconnect a Pueblo Audio JR2/2 with phantom and non-phantom microphones.



## FAQ's (frequently asked questions)

**Q: *What does "DC-Coupled" mean?***

A: DC is an abbreviation for *Direct Current*. DC is an electric current which flows in a single direction, as from a battery. In contrast, audio signals are AC or *Alternating Current*. Typically, capacitors and transformers are used to form AC-Coupled circuits which allow AC signals to pass while blocking DC. Most commercial preamps are AC-Coupled. But caps and transformers are reactive components which produce frequency dependent phase shifts. This can negatively influence perceived resolution and transparency. In a DC-Coupled circuit these components are not present. Since Pueblo Audio preamps are designed with DC-Coupled circuits, their phase and frequency response remain linear and free of reactive distortions. In fact, they have no low frequency cut-off at all; being flat down to zero hertz! This is one reason for their relaxed, effortless sound.

**Q: *Will exposing the DC-Coupled inputs to phantom power harm the Preamp?***

A: No. The preamp inputs are protected from exposure to phantom power, hot patching, static discharge and other such casualties. During product development, a special test jig was fabricated to zap a preamp's input with 60 volts sourced from 2,000uF storage capacitors. The jig cyclically zapped the same preamp once every 90 seconds for 60 days: 57,600 zaps in total (each zap from the jig pulsed enough energy to spot-weld relay contacts!) Afterwards, the preamp was tested and found to still be working perfectly. It still performs beautifully today, many years later. Pueblo Audio's design dispels any concerns, leaving the user worry-free.

**Q: *Are the Phantom channels and Preamp channels internally connected?***

A: No. Each channel is a stand-alone module with no internal signal connections. A number of considerations led to this configuration. First - most commercial preamps which have ribbon mic inputs do not offer fully bypassed phantom circuits. Their phantom circuit's "back end" is always tied to their preamp's front end. This can negatively disturb the mic signal, which partially defeats the purpose of having a special ribbon input. Since JR2/2 phantom channels can be patched completely out of circuit, this issue is totally avoided. Second - all audio electronics, including mics, take an hour or more to warm up and reach optimal operating condition. With Pueblo Audio, an "idle" Phantom channel can remain connected to its mic, keeping it warmed up and ready to go at all times. Third - many Pueblo owner's have remarked on the extra size, image stability and natural timbre that Pueblo Phantom channels gives to their microphones, so they requested the phantom channels be available to use with all their mic preamps.

(continued next page)

***Q: So then why use an XLR cable to patch the Phantom channel to the Preamp? Why not just use a switch or relay?***

A: After extensive auditions it was found that very few switches or relays sounded more transparent than an XLR. Those that did were so expensive it would have pushed final product pricing out of reach. Further, the XLR configuration offered the absolute minimal number of connections in the signal path. Though an unusual solution, the XLR configuration ultimately distinguished itself for cost, fidelity and flexibility.

***Q: But I use Phantom powered mics almost exclusively and don't want to deal with jumper cables.***

A: If desired, any JR2/2 may be ordered with adjacent phantom and preamp channels internally hardwired. This would eliminate the need for external jumper cables. The DC-coupled inputs would still be available, but the phantom circuitry would remain connected. This is a compromise when using non-phantom mics.

## LIMITED WARRANTY

Subject to the conditions set forth below, for three years after the original purchase date of the product, Pueblo Audio, Inc. will repair the product free of charge in the United States & Canada in the event of a defect in materials or workmanship. Pueblo Audio, Inc. may exchange new or rebuilt parts for defective parts.

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