BAND-WIDTH

Audio

Aurora One – Line Preamplifier & Buffer

Owner's Manual

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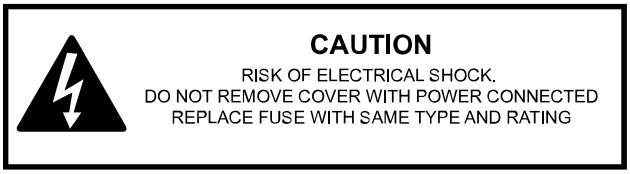
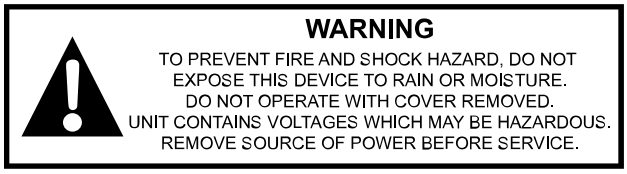
CE

WARNING

FAILURE TO READ OWNER'S MANUAL BEFORE FIRST USE CAN VOID YOUR WARRANTY





CONTAINS LETHAL VOLTAGES

High voltage can be lethal. Do not remove cover while preamplifier is connected to the Mains power source. For service, contact Bandwidth Audio.

HIGH VACUUM TUBE TEMPERATURES

Vacuum tubes can get extremely hot with bulb temperatures capable of reaching 200ºC. Do not touch or attempt to remove the tubes while they are hot.

DO NOT ENCLOSE

This preamplifier will get warm from use. Make sure to place the equipment in a non-enclosed area with good ventilation and air flow.

1.0 Aurora One Connections and Setup

From the factory, the Aurora One is configured in High Gain Mode for all inputs, unless the front gain and bypass toggle switches are used.

- To learn about selecting and programming the gain modes, see Section 2.0.

1.1 Preamplifier Placement

For the best operation and longest life of components, the preamplifier should be set up and used in a well-ventilated area with good air circulation. Do not use the amplifier in enclosed furniture as overheating can damage the amplifier, diminish tube life, and cause risk of fire.

It is always recommended to place the preamplifier on a sturdy, substantial shelf to help minimize vibrations coupled in from the floor.

Radiating electromagnetic noise (EMI) from sources such as large transformers, cellphones, and Wi-Fi routers can also cause audible noise from the speakers if this equipment is placed too close to the preamp. It is best to have this equipment located far away.

1.2 Mains AC Grounding

Always share the same AC mains ground circuit with all other audio equipment.
For lowest noise, it is always recommended to share the same AC mains ground circuit between all audio equipment in a system. The easiest and best way to achieve this is to share a common outlet or known common circuit and use a high-quality power strip to power all pieces of equipment. This is most desirable to ensure the ground reference of all audio equipment is at the same potential.

Ground is used as a safety voltage reference and should not have any current flowing. However, it is likely that any 2 ground circuits in a building's wiring will have a small voltage differential between them. If these grounds are shared by audio equipment, a ground loop is formed, and the small voltage differential can now drive a current through the audio ground, causing noise.
Faulty equipment on the AC line can also be a source of ground noise.

1.3 Powering ON & OFF

The Aurora One is designed with a time delay start sequence to ensure all operating voltages are stabilized and the preamplifier is ready to play audio before the output is active. This removes the chance of any pop and noise during power on and off. The Aurora One can be turned on and off without any need for power sequencing with other equipment. The "Active" indicator on the front panel shows the status of the power-on sequence. The preamp output will be active approximately 25 seconds after power-on.

The power on sequences is as follows:

The Aurora One "Power" indicator will illuminate. The "Input," "Gain," "Bypass," and "Mute" settings will also illuminate with their status. After a delay of approximately 25 seconds, the "Active" indicator will illuminate, indicating that the preamp is ready for use and music will play.

1.4 Input Connections

Input connections are made by connecting analog audio sources to the Aurora One using the RCA inputs on the back of the unit. Up to 6 stereo inputs can be connected at a time.

Input selection is made by using the rotary "Input" knob on the front of the unit. LEDs will illuminate to show which input is selected.

1.5 Output Connections

The Aurora One is equipped with 2 pairs of stereo RCA outputs on the back of the unit. Each output is independently buffered to prevent unwanted loading.
The signal on each output is identical which gives the ability to drive active subwoofers, control zones in a house, or quickly change between 2 stereo setups. Each output can be muted using the toggle switches on the front.

2.0 Gain Selection

The Aurora One is designed with 3 gain level modes to improve volume level matching between audio source. This reduces the need for constant volume control adjustments when changing the input source.

The 3 Gain levels are:

- **Bypass:** 0dB
- **Low Gain:** 8dB
- **High Gain:** 14dB

Gain selection is controlled in two ways:

1. **Manual Controlled Gain** (Section 2.1)
   Using the "Gain" and "Bypass" toggle switches located on the front to override the pre-programmed gain.

   When starting out, it is recommended to use the manual controlled gain (front toggle switches) to help determine the best gain setting for each input connected. Once the desired gain has been found, gain setting can be programmed using the DIP switches located on the back of the unit. This way, the gain can now automatically be recalled as the inputs are selected.

2. **Pre-Programmed Gain** (Section 2.2)
   Using the DIP switches located on the back of the unit to program each input.

2.1 Manual Controlled Gain

The Aurora One's preamp gain can be manually selected using the "Gain" and "Bypass" toggle switches located on the front of the unit. The "Gain" and "Bypass" switches each have 3 positions.

Gain Toggle Switch:

Down: Low Gain Mode (forced)
Middle: Pre-programmed control is selected
Up: High Gain Mode (forced)

Bypass Toggle Switch:

Down: Bypass Off (forced) - Gain mode always selected
Middle: Pre-programmed control is selected
Up: Bypass On (forced) - Bypass always on regardless of gain setting

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Note: It is important to remember that the Bypass switch automatically takes priority over the gain switches. With Bypass mode forced on, the gain selection is ignored. This is due to the fact that Bypass mode has 0dB of gain. The gain selection is therefore irrelevant.

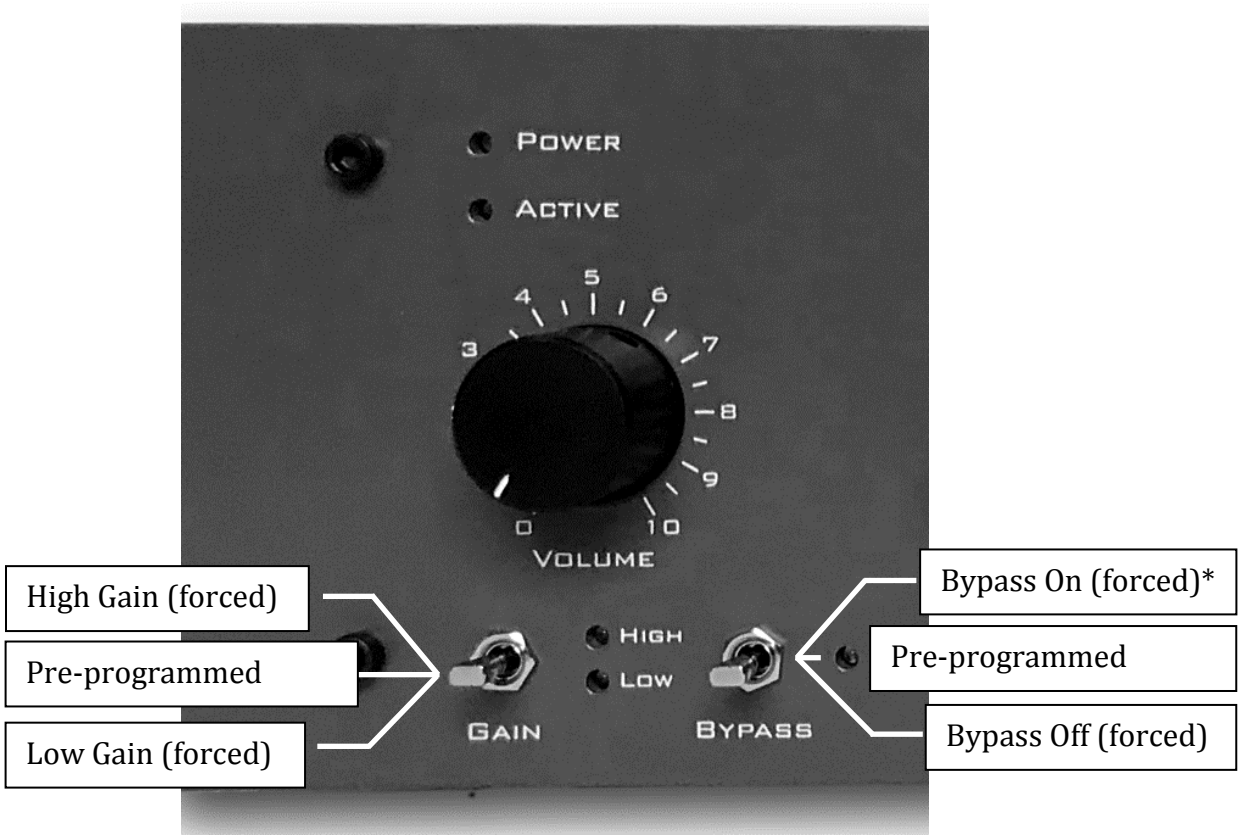


Figure 1: Positions of Gain and Bypass switches

** Bypass On takes priority, all gain selections are ignored*

Bypass On:

When Bypass mode is ON, the LED next to the bypass switch will illuminate and the Aurora One will enter Bypass mode with 0dB of gain.

Simultaneously, the High or Low Gain LED (whichever was selected) will turn off. This is to remind the user that Bypass mode takes priority over the gain setting when Bypass is on. ***The Aurora One will never enter High or Low gain mode.***

Bypass Off:

When Bypass mode is Off, High or Low Gain LED (whichever is selected) will illuminate. ***The Aurora One will never enter Bypass mode.***

Bypass Pre-programmed:

With the Bypass toggle switch in the middle position, Bypass mode will be determined by the Pre-programmed setting located on the back of the unit.

High Gain:

When the Gain mode is set to "High Gain", the "High Gain" LED will illuminate and the Aurora One will have a gain of 14dB. This is only true if the Bypass toggle is forced Off or if the Bypass in the pre-programmed setup is also off (bypass has priority).

Low Gain:

When the Gain mode is set to "Low Gain", the "Low Gain" LED will illuminate and the Aurora One will have a gain of 8dB. This is only true if the Bypass toggle is forced Off or if the Bypass in the pre-programmed setup is also off. (Remember, bypass has priority).

Gain Pre-programmed:

With the Gain toggle switch in the middle position, the Gain will be determined by the Pre-programmed setting located on the back of the unit.

2.2 Pre-Programmed Gain

The Aurora One's preamp gain can be pre-programmed for each audio input (1 through 6) using the DIP switches located on the back of the unit. The gain setting is then automatically recalled when the desired input is selected using the "Input" knob on the front.

Note: For the Pre-programmed settings to take effect, the "Gain" and "Bypass" toggle switches must be in the middle positions (selecting pre-programmed control). Otherwise, they will force the preamp into a different mode.

The goal is to set the gain for each input such that the volume difference between audio sources is minimized when changing inputs. This will not only provide better matching between audio sources with different signal levels, but also will reduce the risk of destroying your speakers and your hearing by selecting an undesired input.

2.2.1 Setting the DIP Switches

The DIP switches are set by sliding each contact, (1 through 6) to the desired position. Each switch corresponds to the audio inputs (1 through 6). The left-most switch controls input 1. The right-most switch controls input 6.

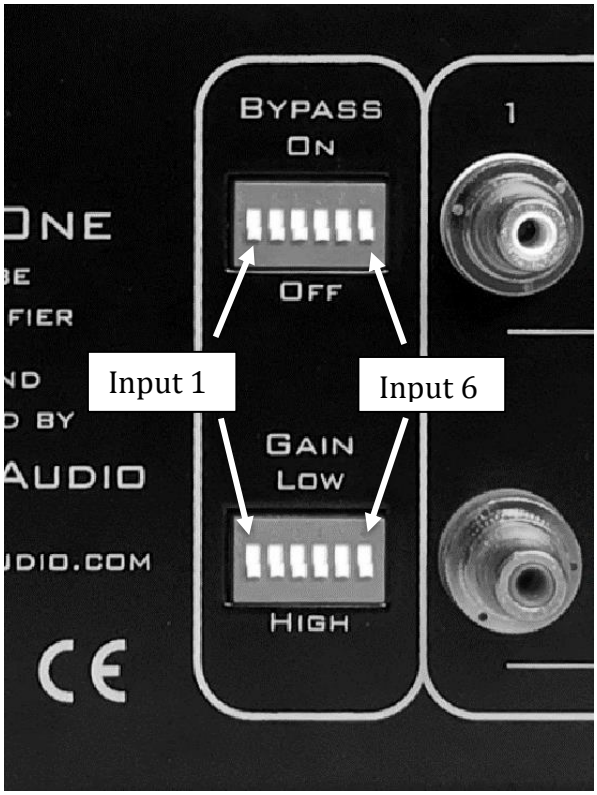


Figure 2: DIP Switches for Pre-Programmed Gain Control

There are 2 banks of switches:

Bypass: On and Off

Gain: Low and High

Bypass switches set "On":

The input programmed to this mode will automatically go into Bypass mode when this input is selected by the front panel.

> **Note:** It is important to remember that the Bypass switch automatically takes priority over the gain switches. With Bypass mode on, the gain selection is ignored. This is due to the fact that Bypass mode has 0dB of gain. The gain selection is therefore irrelevant.

For example, if input 2 is set to Bypass "On" and input 2 is also set to "Low Gain", the Aurora One will automatically go into Bypass mode regardless of the gain setting whenever input 2 is selected,

Bypass switches set "Off":

The input programmed to this mode will automatically go into "Low" or "High" Gain, depending on the Gain switch setting, when this input is selected by the front panel.

Gain switches set "Low":

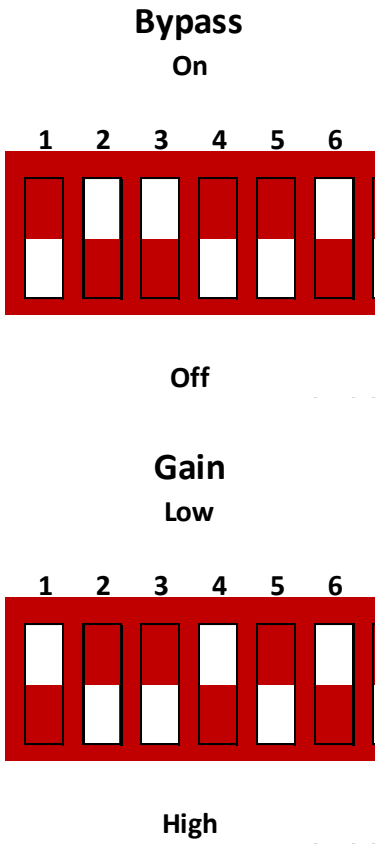
The input programmed to this mode will automatically go into Low Gain when this input is selected by the front panel. ***Bypass must also be set to Off to take effect.***

Gain switches set "High":

The input programmed to this mode will automatically go into High Gain when this input is selected by the front panel. ***Bypass must also be set to Off to take effect.***

2.2.2 Gain Setting Examples

The examples below show various pre-programmed gain settings for the Aurora One.

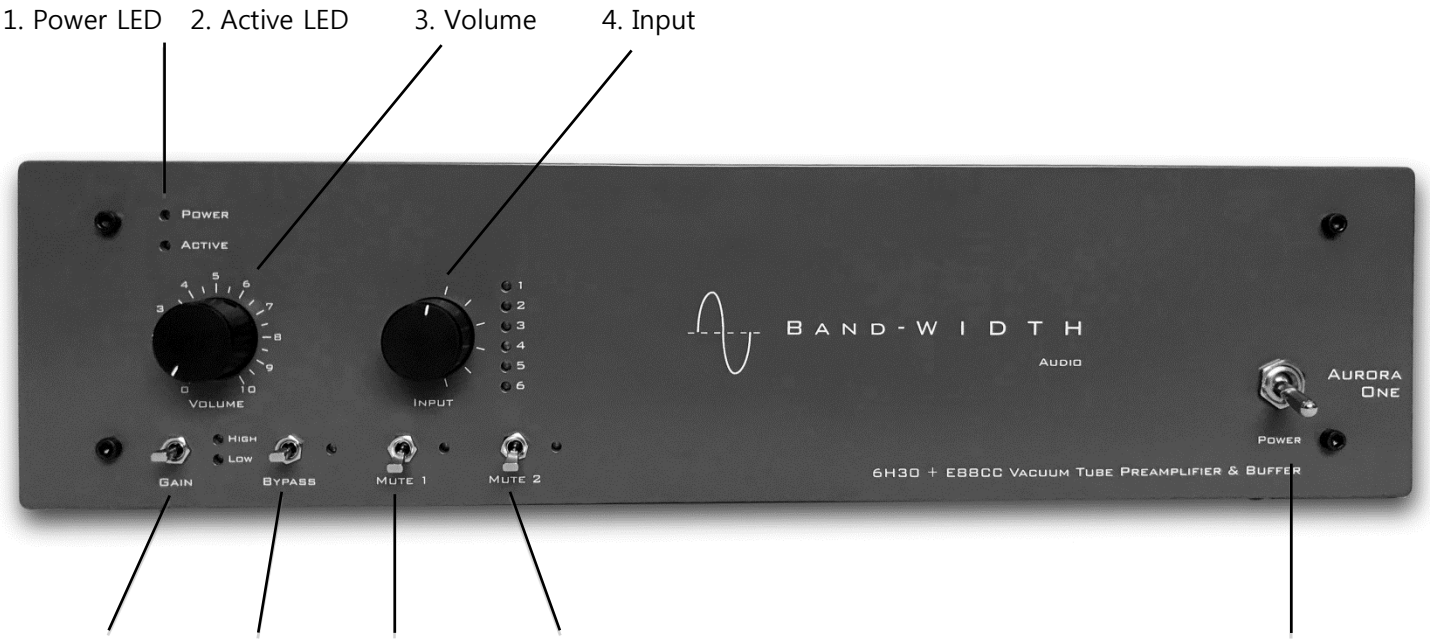


Final Gain Setting Based on Switch Positions	
Input	**Mode**
1	Low Gain
2	Bypass
3	Bypass
4	Low Gain
5	High Gain
6	Bypass

Figure 3: Pre-Programmed Gain Example

3.0 Controls and Layout

3.1 Front Features



1. Power LED — The Power LED illuminates when power to the preamp is switched on.

2. Active LED — The Active LED indicates the status of the time delay startup sequence. The time delay removes the chance of pop or noise on power-on. During the warmup period, the LED is off, indicating the unit is held in an automatic mute. Approximately 25 seconds after power-on, the LED will illuminate to indicate the preamplifier is active and ready to use.

3. Volume — Controls the overall volume of outputs 1 & 2 simultaneously.

4. Input	Selects which input is active. Input LED shows the current selection.
5. Gain	Toggle switch used to force High, Low Gain, or pre-programmed gain selections (middle).
6. Bypass	Toggle switch used to force Bypass On, Bypass Off or pre-programmed bypass selection (middle).
7. Mute 1	Used to mute the Output 1 of the preamp. The switch is active in the up position. LED indication will show when mute is active.
8. Mute 2	Used to mute the Output 2 of the preamp. The switch is active in the up position. LED indication will show when mute is active.
9. Power	Used to turn the amplifier on and off. **On** is in the up position, and **Off** is in the down position.

3.2 Back Features

1. Mains Input — Socket to connect removable wall power cord. ***Use only voltage indicated on the serial number tag below mains input.***

2. Mains Fuse — For 115-120VAC ***Use only 1.25 Amp Slow Blow Fuse***
For 230-240VAC ***Use only 0.75 Amp Slow Blow Fuse***
Check serial number tag for correct mains voltage and Fuse type. Fuse size is 5x20mm glass cartridge. The Mains Fuse is in series with the mains input to protect the user and amplifier from a short circuit failure.

3. Bypass Switches — Pre-programs Bypass Mode "ON" or "OFF" for each input (1 through 6).

4. Gain Switches	Pre-programs Gain Mode "LOW" or "HIGH" for each input (1 through 6). This setting takes effect if Bypass is set "OFF" for the input of interest.
5. Inputs	6 Left/Right pairs of RCA inputs.
6. Output	2 Left/Right pairs of RCA Outputs. Outputs are individually buffered with separate mute controls for outputs 1 and 2.

4.0 Typical Specifications

Gain
14dB (High Gain)
8dB (Low Gain)
0dB (Bypass)

Channel Balance (with volume knob set at -6db)
0.01dB (High Gain)
0.01dB (Low Gain)
0.2dB (Bypass)

THD+N (1V RMS output)
0.03% (High Gain)
0.06% (Low Gain)
0.01% (Bypass)

THD+N (2V RMS output)
0.05% (High Gain)
0.08% (Low Gain)
0.01% (Bypass)

Frequency Response (-3dB down)
Less than 10Hz and above 175KHz

Input Referred Nosie (A-weighted)
1.9uV / -112.2dBu (High Gain)
3.5uV / -106.9dBu (Low Gain)
8.1uV / -99.6dBu (Bypass)

SNR 2V RMS Output (A-weighted)
-106dB (High Gain)
-107dB (Low Gain)
-108dB (Bypass)

Rated Output
10V at 0.5% THD+N

Input Impedance
50KΩ

Recommended Load (Output)
10KΩ or greater

Tubes (Tested and Matched in House)
2x 6H30PI
2x E88CC / 6922

Voltage
Available for 115-120VAC or 230-240VAC

Power Consumption
70 Watts

Dimensions (Includes faceplate and feet)
17.5" x 14.25" x 4.5"

Due to the open loop design of this preamplifier, actual performance will vary depending on vacuum tube quality. Specifications subject to change.

5.0 Notes:

Note: _____

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Gain Settings

Input: 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____

Note: _____

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Gain Settings

Input: 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____

Note: _____

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Gain Settings

Input: 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____

Note: _____

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Gain Settings

Input: 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____

General Notes: _____

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