



## *Channel D Seta<sup>®</sup> Piccola Buffer*

**Balanced Direct-Coupled Ultra Wide Bandwidth Active DAC Attenuator**

**With AGM Rechargeable Battery Power Supply**

**Installation and Use Guide**

**Seta Piccola Buffer Installation and Use Guide**

**With AGM Rechargeable Battery Power Supply**

**Installation and Use Guide**

Use Guide Revision 1a

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**Congratulations on your purchase of a Seta® Buffer!** The Seta Buffer is a low noise, fully balanced design featuring an ultra-wide frequency bandwidth of 20 MHz. This provides you with the key to obtaining stunning, detailed three-dimensional music reproduction from your computer audio system. The Seta Buffer is designed to be used as a back-end signal conditioning stage to facilitate setting the correct system gain (“gain structure” in pro-audio parlance) of your digital audio playback system.

Unlike passive attenuators, the Seta will present a negligible (2 megohm) load to your audio interface or DAC output, while also providing extremely low output impedance. This is suitable for driving any power amplifier with a low noise, low distortion signal.

The Seta Buffer incorporates several design features which contribute to its high performance:

- Ultra low impedance AGM rechargeable batteries used as charge storage reservoir and power supply filter; proprietary, exclusive charging and maintenance circuitry specially designed by Channel D and proven, refined and used exclusively in our phono stage designs for over 5 years
- Carefully selected low noise switching power supply, with additional filtering for ultra low noise
- State of the art, premium quality low - ESR polymer dielectric electrolytic and tantalum filter capacitors
- Ultra precision (0.1% tolerance) metal film low noise 1206 / MELF surface mount resistors used throughout
- Ultra low distortion, low impedance differential output stage with greater than 40 MHz signal bandwidth

### **Getting Started**

Please take the time to read this Installation and Use Guide, to familiarize yourself with the installation and operation of the Seta Piccola Buffer.

*Important:* If the package you received from your shipper is below room temperature, please allow the package to acclimate at room temperature for a few hours before opening it, to avoid moisture condensation on cold internal surfaces.

The following items are included. Please check the package and notify Channel D of any shortage:

- Seta Piccola Buffer with Internal AGM Batteries Installed
- RCA female to XLR male adapters, pin 1 open
- External DC power supply, 110 / 220 Volt Input

After unpacking, connect the provided external power supply to an AC power source and plug the barrel connector into the power jack on the rear panel of the Seta. Note: the switching type, “wall wart” supply was carefully selected for its especially low noise. The switching power supply also provides much better galvanic and high frequency noise isolation from utility power than a linear power supply.

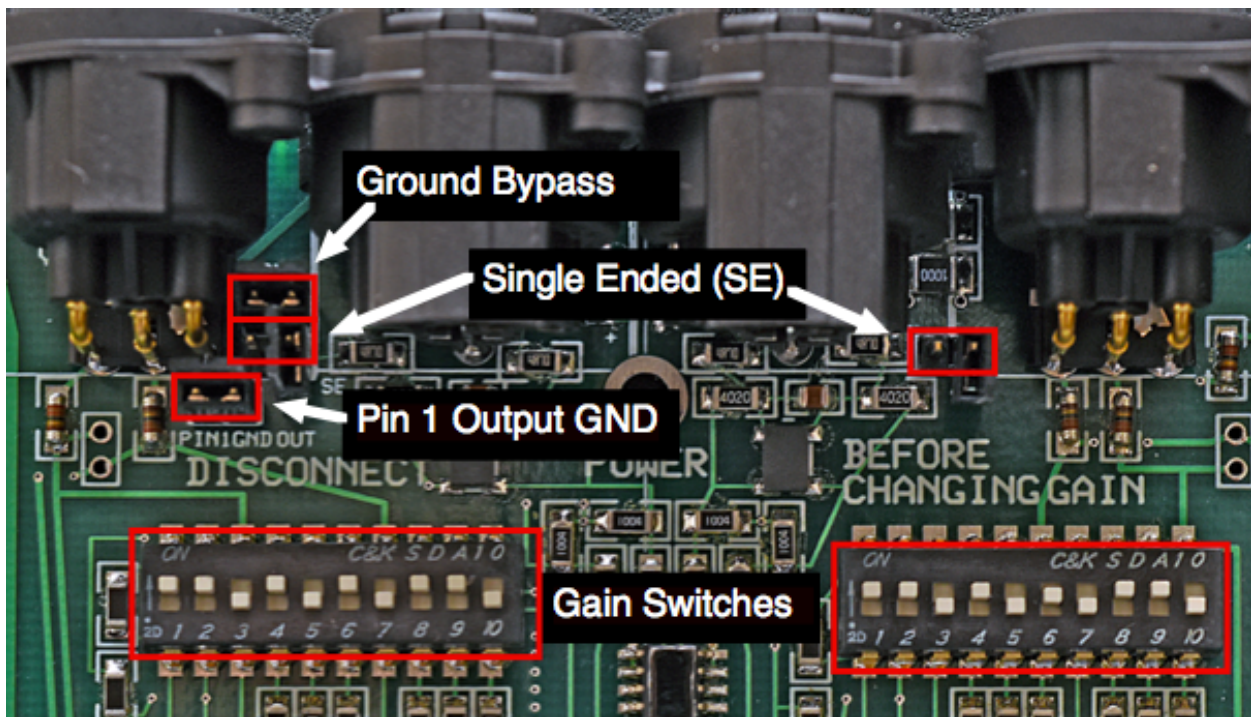
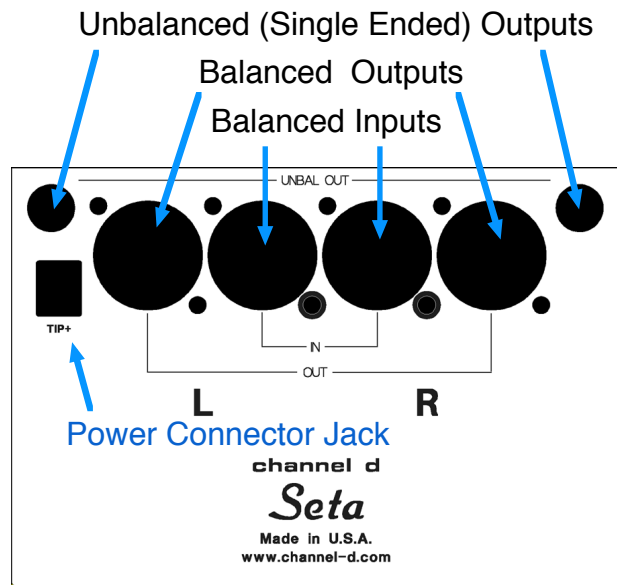
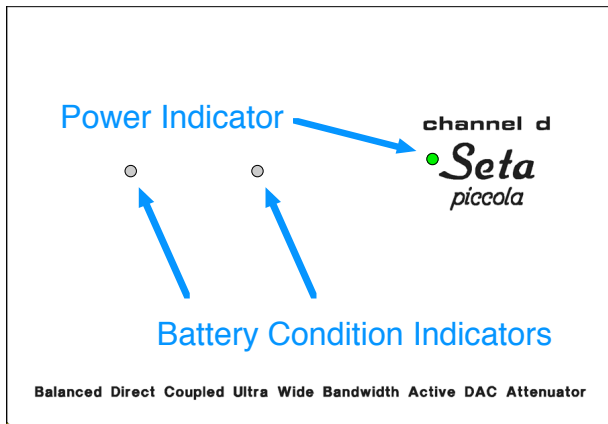
**Signal connections** can safely be made to the Seta Buffer *whether or not the power supply is connected. However, be sure to mute or power down your power amplifier(s) while making signal connections, to avoid generating transients which could damage loudspeakers.*

### **Signal Inputs**

- The XLR inputs are intended for connection to the balanced outputs of your audio interface or DAC. Adapters are included for connecting single ended (unbalanced) sources.

### **Signal Outputs**

- The balanced XLR outputs are for connection to the balanced inputs on your power amplifier.
- The RCA outputs are true single ended (unbalanced) outputs, for connecting to single ended equipment.



**Power**

- Connect the barrel connector of the supplied power adaptor to the (tip positive) power input jack.

**Gain Adjustment**

***WARNING!*** Always make changes to the Gain with the power amplifier muted or turned off, to keep **loud** transients from playing through the loudspeakers, which may damage the loudspeakers. Disconnect the Buffer power supply before making changes to the Gain switches. The power supply can be disconnected at the Buffer input jack, or unplugging the power adaptor.

To access the gain switches, remove two Philips head screws from the cover on each side. **The gain and corresponding switch settings can be found on the inside of the lid.** While evaluating gain adjustments, it's permissible to leave the cover off the unit, or else resting on top without fasteners.

The optimum gain setting is that which allows using your computer audio software's digital gain control between -12 and 0 dB for critical listening sessions. The correct gain will be dependent on the overall gain of your power amplifier plus the sensitivity of your loudspeakers.

Be careful when setting the gain switches that the settings are made **only using the switch closure combinations listed**. Both switches must be set identically. Any other switch combinations are invalid and will result in distortion or noise in the output. **Double check the switch positions after making any setting changes. Then, connect the Buffer power supply and finally un-mute or turn on the power amplifier.**

### **Ground Bypass Jumpers**

The ground jumpers may be used to bypass (in the bridging position) the 100 ohm local input ground isolation resistor directly to common. The jumpers should normally be left in the factory (bridged) setting.

### **Pin 1 Output GND**

Provides a direct connection between Pin 1 of the output connector and ground, bypassing a 100 ohm resistor. The jumper should normally be left in the factory (bridged) setting.

### **Single Ended Jumpers**

The circuit board jumpers labeled SE should be placed in the bridged position if using the supplied single ended to balanced adapters. The factory setting is in the open position, for balanced input connections.

Note: the single ended *output* connections are derived from the balanced signal path, and are not affected by the setting of the SE jumpers. If your input source is balanced and the output is single ended, the jumpers should be kept in the factory (unbridged) position.

### **AGM Rechargeable Battery Operation and Charging**

The Seta Buffer should be kept powered, to maintain both a stable circuit temperature and the condition of the AGM battery. The idle (no signal, battery charged) power consumption is only 1 watt. If necessary, the Seta may be disconnected from the power supply for up to a few months without adversely affecting the battery life. *Do not store the Seta at elevated temperatures*, such as in an attic or garage.

The Seta *must* be connected to the external power supply for operation. This design insures that the battery isn't accidentally over-discharged, which could shorten its life. The power supply is used to activate two normally-open relays, connecting the battery to the Seta circuitry, and the charging supply to the battery.

### **Battery Life / Battery Replacement**

Typical battery life will be between 3 and 6 years; up to 20 years is possible. The battery life will be extended by keeping the Seta Buffer continuously connected to a power source (the idle power consumption with a fully charged battery is less than 2 watts).

When either Battery Condition indicator illuminates with a continuous red color, and remains in that state for an hour or more, the rechargeable batteries should be replaced.

The AGM lead/acid battery is a widely available type, commonly used for security alarm systems. The batteries are available from McMaster-Carr ([mcmaster.com](http://mcmaster.com)), part number 7448K57. The direct factory replacement is Power-Sonic PS-445, 4 volt, 4.5 ampere hours (AH) with dimensions (millimeters) 48 L x 53 W x 94 H with quick-disconnect 6.35 mm (0.25") size tab terminals. **Power-Sonic website:** [http://www.power-sonic.com/ps\\_psg\\_series.php](http://www.power-sonic.com/ps_psg_series.php)

- The batteries **must** be replaced in pairs, and only sealed lead-acid type batteries can be used. **All** other battery types are incompatible with the internal battery monitoring and maintenance circuitry and Seta power and voltage requirements.
- It's best to obtain a "fresh" replacement when needed, rather than keeping spares on hand, because degradation may begin to occur if stored for more than a few months without charging.
- Replacement batteries should be at ambient room temperature before installing.
- Observe proper polarity, connecting the red connector to the red color coded battery terminal, etc.

If you don't wish to perform the battery replacement yourself, the Seta can be shipped to Channel D for battery replacement. *Please contact Channel D for shipping information and pricing, and a Return Material Authorization.*

#### Specifications - Seta Piccola Buffer

- **Voltage Gain:** 0, -6, -12, -18, -24, -30 dB (nominal settings)
- **Input Resistance, Differential:** 2 megohms
- **Output Impedance:** 22 ohms
- **Frequency Response (-3 dB):** DC to more than 20 MHz, at any gain setting
- **Phase Shift:** ultralinear, less than 1 degree, DC to more than 100 kHz, at any gain setting
- **Distortion:** less than 0.0003% THD or IMD (19 kHz || 20 kHz), DC to more than 20 kHz, at any gain setting, 1 volt output level
- **Channel Separation:** Better than 90 dB, DC - 20 kHz
- **Circuit Topology:** Fully balanced, direct-coupled (no capacitors in the signal path)
- **Inputs:** Neutrik, Premium Gold Pin XLR Balanced
- **Outputs:** Neutrik, Premium Gold Pin XLR Balanced; gold plated RCA unbalanced
- **Output Drive Capability:** Balanced cable, up to 33 feet (10 meters), 600 ohms or greater load impedance
- **Storage Temperature (with charged AGM batteries):** 0 to 78 degrees F
- **Operating temperature:** 40 to 78 degrees F; battery life will be diminished at higher temperatures
- **Power Consumption:** less than 5 watts

#### Dimensions

- 5"X 3.7"X 5.5" (W x H x D)
- Weight: 4.5 pounds

#### Warranty

- One year parts and labor, limited warranty. In the unlikely event your Seta must be returned to Channel D for repair, contact Channel D in advance for a return material authorization number and shipping instructions.

In keeping with our continuing efforts to enhance and improve our products, we reserve the right to change specifications without notice.

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### Seta Piccola Buffer Gain Settings

Nominal Gain (dB)	(Actual)	Switch Position (ON)
-30	(-29.8)	3, 7
-24	(-23.7)	ALL
-18	(-17.8)	1, 2, 4, 5, 6, 8, 9, 10
-12	(-11.7)	1, 2, 4, 6, 8, 9
-10	(-9.96)	1, 2, 4, 9
-6	(-5.77)	NONE (Alternate -6)
-6	(-5.61)	1, 2, 6, 8 (Preferred -6)
0	(+0.35)	1, 2