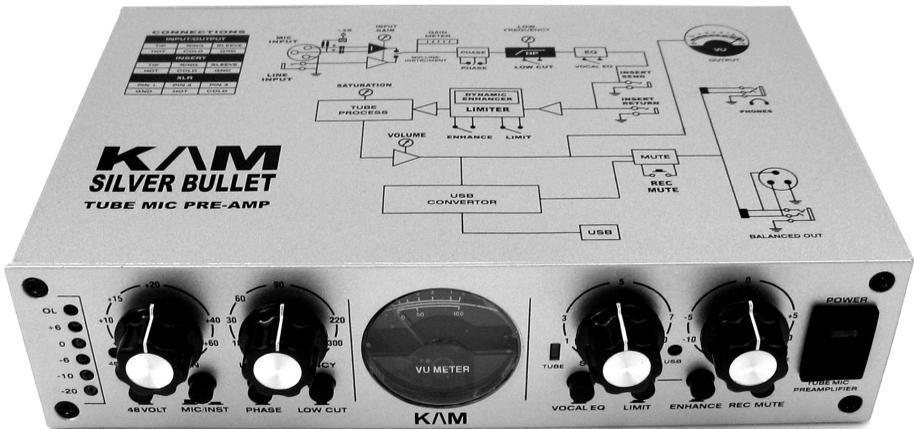


# KAM

## SILVER BULLET

TUBE MIC AND INSTRUMENT PREAMP

OWNER'S MANUAL



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## SAFETY

- Do not expose this product to rain or allow liquids to enter it.**
- Do not make or handle electrical connections with wet hands.**
- Do not modify this unit or the AC adapter in any way.**
- Do not allow metallic objects to enter this device or the AC adapter.**
- Do not open or attempt to repair this device or the AC adapter.**
- Do not block any of the ventilation openings.**

### **Condensation Warning:**

**Condensation may occur when this device or the AC adapter are taken from a cold environment to a warmer and more humid environment. In such a case wait for about an hour or until condensation disappears before connecting the AC adapter to an electrical outlet and operating the device. Water droplets inside the device can cause electrical shorting.**

## INTRODUCTION

Silver Bullet can provide pre-amplification and substantial “sweetening” of your sound sources. The clarity and richness of tone produced by Silver Bullet surpass non-tube pre-amps. While the incorporated 12AX7 tube can add the desired amount of odd and even harmonics using the saturation control, other incorporated facilities help you shape and control the input signal based on your artistic taste.

Please read this entire manual since it will provide practical points to help you operate your new unit safely and to its maximum potential.

Before any new KAM product model is offered to the public, it is extensively tested in studio and for live performance (when applicable) to ensure that it provides unique benefits to artists in the process of music creation. We appreciate your trust in our products and hope to have you as a long-term partner in bringing musical enjoyment to the world.

Kamran Salehi  
Founder and President  
KAM Instruments Corporation

## WARRANTY AND REPAIRS

Silver Bullet is covered by a 90-day parts and labor warranty. If you suspect that your unit is defective, please contact us using the contact information provided below by email (preferred) or phone and provide a description of the issue you are having. If we cannot resolve your issue remotely, we will provide you with return or service authorization. Upon receiving your unit and proof of purchase date, we will repair or replace your unit at our discretion. Proof of purchase date is not necessary if you purchased your product from our company directly. Damage caused by abuse or overloading Silver Bullet is not covered by the warranty.

### Contact Information:

( Any updates will be on [www.KAMinstruments.com](http://www.KAMinstruments.com) website)

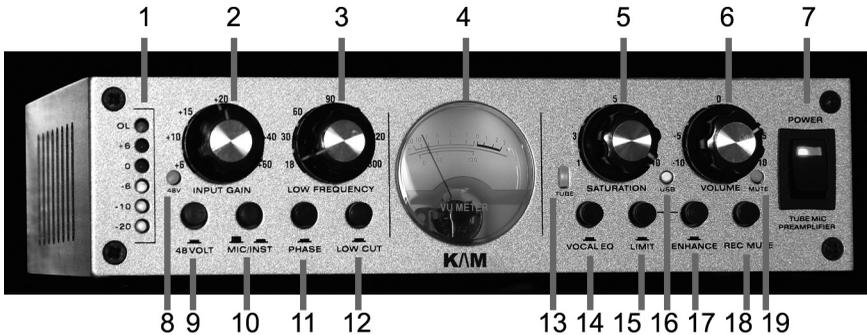
email: [info@KAMinstruments.com](mailto:info@KAMinstruments.com)

Phone: (630)539-2240

Address:

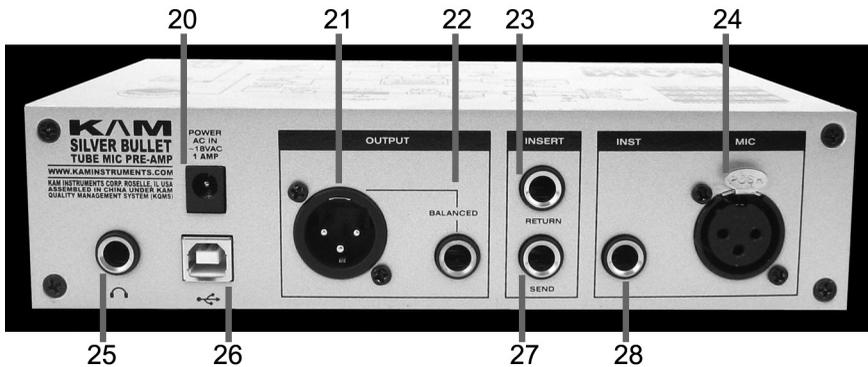
**KAM Instruments Corporation**  
**270 South Garden Ave.**  
**Roselle, IL 60172**  
**USA**

## CONTROLS AND INDICATORS



1. LED input indicator lights
2. Input gain control knob
3. Low frequency cut-off control knob – Only active when LOW CUT switch (12) is pushed in.
4. VU Meter, Indicates output level
5. Tube saturation control knob
6. Output volume control knob
7. Power switch
8. Phantom power indicator light
9. Phantom power switch – provides 48 volt phantom power to XLR mic input jack when pushed in
10. Mic / Instrument input selection switch
11. Input Phase reversal switch
12. Low Cut switch – cuts off frequencies under the frequency selected by low frequency cut-off control knob (3), at rate of 12dB per octave.
13. Tube ready light – turns on approximately 25 seconds after the unit is powered on indicating that the tube has warmed up for operation.
14. Vocal EQ switch, adds clarity to vocals by boosting high frequencies centered around 10 KHz by 6 dB.
15. Limiter switch – limits peaks of input signal preventing overloads
16. USB indicator light – lights up when a USB connection is established
17. Dynamic Enhancer switch – when pressed, boosts high frequencies between 3.5KHz and 20KHz, at a variable rate, only at moments when limiter is reducing signal strength, and proportionally to input signal strength, creating the perception of a louder signal.
18. Record Mute switch – mutes output when pressed
19. Record Mute light – turns on when Record Mute Switch (18) is pressed.

## CONNECTIONS



- 20. AC power input
- 21. XLR output
- 22. ¼ inch balanced output jack
- 23. ¼ inch balanced Insert Return jack
- 24. XLR Microphone input jack
- 25. Headphone jack (mono signal is sent to speakers for both ears)
- 26. USB 2.0 port
- 27. ¼ inch balanced Insert Send jack
- 28. ¼ inch balanced Instrument input jack

Note: All ¼ inch balanced jacks can also be used with unbalanced cables.

## CONNECTION AND OPERATION CAUTIONS

- 1 - Before making or changing connections, turn Input Gain knob (2) and Volume knob (5) to minimum positions.
- 2 - Select appropriate input using Mic / Instrument input selection switch (10)
- 3 - If your microphone requires phantom power (e.g. condenser mics), turn on phantom power by pressing Phantom Power switch (9). Note that turning phantom power on or off generates a loud momentary signal. It is very important that the gain is turned to minimum when this switch is operated.
- 4 - Gradually increase input gain while input signal is present by turning Input Gain knob (2) clockwise until green input indicators light up.
- 5 - Gradually increase output volume by turning Volume knob (5) clockwise until the VU meter indicates desired output level. Monitor the input level indicator of any device that is receiving signal from Silver Bullet to ensure it is not overloaded.

# OPERATING SILVER BULLET

Audio engineering is an art as well as a science. While some general guidelines are described here, we are certain that audio engineers will find ways to use Silver Bullet not even imagined at design time. We encourage you to experiment and discover new ways to enhance the sonic quality of sound sources. As a high quality pre-amp the effects of Silver Bullet on sound are subtle and careful listening with high quality monitoring devices (high quality headphones or studio monitors) is required to perceive and adjust those effects. The objective of pre-amplification is not to create special effects similar to an effects unit, but to control the sound in ways that sound natural.

## Establishing Levels

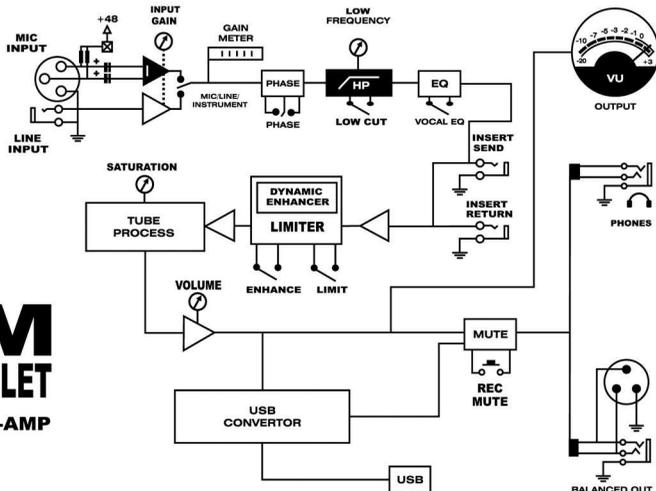
It is a good idea to monitor sound using headphones or other means when establishing levels among connected devices to ensure that they are not being overloaded. Generally, distortion and “clipping” in sound indicates overloading of circuits. Any electronic circuit has limitations. Most circuits can survive moderate overloads for a short period of a few seconds. Prolonged or drastic overloading can permanently damage any electronic circuit.

## Internal Components and Processes

The diagram printed on top of Silver Bullet provides a reference for how the internal components interact. It is a simplification of the internal wiring to help you operate the device. Experimentation with different settings is the best way to understand how different controls and internal components interact with input signal.

**CONNECTIONS**

INPUT/OUTPUT		
TIP	RING	SLEEVE
HOT	COLD	GND
INSERT		
TIP	RING	SLEEVE
HOT	COLD	GND
XLR		
PIN 1	PIN 2	PIN 3
GND	HOT	COLD



**KAM**  
**SILVER BULLET**  
**TUBE MIC PRE-AMP**

## Tube Saturation

Tube sound quality has been the subject of endless discussions among musicians and sound engineers. As much as we enjoy those discussions, this is not the place to address them. We will focus on how Silver Bullet's tube can modify sound coloration. When saturation is turned up, odd and even harmonics of the signal are boosted. This creates a special warmth in the sound. In addition to position of Saturation Knob, the following factors affect the amount of tube saturation in the sound;

- A- **Higher signal strength and gain control settings produce higher saturation.** Increase gain and allow the yellow input LEDs to momentarily light up to hear the effect. It is O.K. if the red LED (marked OL) lights up once in a while for a very short time (fraction of a second). If the red LED is on any longer, you may be overloading the device, which can permanently damage it.
- B- **When limiter is turned off, saturation effects may be more perceptible.** However, input and output levels need to be controlled and monitored more carefully when the limiting circuit is not being used.

## Distortion

Silver Bullet is not designed to produce "clipping" distortion similar to a guitar amp. While sound can become distorted when input signal and input gain control are high and limiter is off, producing distortion is not the function of a high quality pre-amp. Silver Bullet can be carefully used to produce minimal clipping distortion effects. The maximum safe input should only light up the red input LED (Marked OL) occasionally and briefly. Too high of a gain setting and/or input signal level can damage the internal circuits. Such damage is considered abuse and is not covered by the warranty.

## Limiter and Enhancer Circuits

The limiter circuit in Silver Bullet is very useful in keeping occasional signal peaks under control. However, in general use of a limiter will reduce the dynamic range of a signal. If gain settings are too high and limiter is activated very frequently or almost all the time, the sound may be perceived as too restricted and compressed.

To reduce the perception of sound restriction, Silver Bullet has a special enhancer circuit which works in combination with the limiter. In nature and in physical instruments, louder sounds have more high frequency content. For example; a loud piano or guitar note have more relative high frequency content compared to a soft one. So the enhancer circuit in Silver bullet slightly boosts the high frequency content between 3.5 KHz and 20 KHz at the

moments when the signal strength is reduced by the limiter circuit, and in proportion to how much the limiter cuts the signal strength. This is a very subtle but useful effect for controlling peaks while maintaining a natural feeling of openness in the sound.

### **Using the Insert loop**

Why should a pre-amp have an insert loop? Keep in mind that Silver Bullet allows you to directly record its output via the USB port to computer recording software. The insert loop allows you to use one or more analog effects processors, without the need to convert your recording back to analog and digital again. Thus helping in creating more pristine recordings.

When using the insert loop, follow the same principals explained in “CONNECTION AND OPERATION CAUTIONS” , and “Establishing Levels” sections of this manual. You can use multiple analog effects buy sending the output of one to the input of the next and connecting the output of the last effects unit in the chain to Silver Bullet’s “Insert Return” jack.

## **USB CONNECTIVITY**

When the USB port of Silver Bullet is connected to a computer via a USB cable, the USB indicator light on Silver Bullet turns green. Your computer will recognize and automatically install a new USB device called “KAM SB”. These two events indicate that a successful USB connection has been established.

Due to the abundant variety of computer hardware and recording software, KAM Instruments cannot help you in resolving computer-recording issues. You should contact your software supplier for support.

### **General points regarding USB sound sources:**

Most recording programs allow you to select or specify input devices. Make sure you select “KAM SB” as your input device.

Some programs may not monitor or echo the sound as it s being recorded. In such cases you can use the headphone output of Silver bullet to monitor the sound while it is being recorded. The headphone output can also be sent to a mixer. A regular instrument cable (Unbalanced ¼ inch) can be used for this purpose.

On some slower computers occasional ticking, clicking, and popping sounds in the recording can be caused by too many programs (for example anti virus and instant messaging programs) running in the background. Close all unrelated or unnecessary programs while you are recording.

If the signal from Silver Bullet is not being recorded or is severely distorted, make sure you have selected "KAM SB" as your input device. There can be conflicts in your computer's audio setting, which cause this problem.

## **CARE, PLACEMENT, AND CLEANING**

The tube inside Silver Bullet has a filament similar to those in light bulbs. Do not expose the device to sudden shocks (such as dropping it) to avoid damage to the tube and other parts. When the device is on, the filament is glowing, closer to melting point, and more susceptible to damage from strong shocks. Careful change of placement when the device is on is O.K. and will not cause damage. So don't worry too much about this point!

The incorporated 12AX7 tube can provide from several thousands to over 10,000 hours of service. Unfortunately, since vacuum tubes are somewhat similar in nature to light bulbs, their useful life cannot be exactly predicted. However if the incorporated tube fails, we can replace it for a very reasonable service cost. Disassembly and re-assembly of Silver Bullet is complex, difficult, and voids the warranty. Do not attempt it yourself.

Place the device away from sources of heat which may cause overheating of the unit. Strong magnetic fields such as transformers, or CRT computer monitors may introduce noise if they are too close to the unit.

Do not use solvents such as alcohol or strong chemicals to clean the exterior as they can damage the finish, markings, and the VU meter plastic cover. If necessary, use a soft cloth dampened (but not wet) with water, or water and mild soap to clean the exterior.

# SPECIFICATIONS

Frequency Response: 20 Hz – 20 kHz +/- 0.5 dB

Dynamic Range: 95 dB

THD: 0.008 % @ +4 dBu, 1 kHz (@Min. Tube Saturation - Note: Tube saturation, although pleasant to the ears, is a distortion of the original signal.)

Detector Type: RMS

CMRR: >55dB @ 1kHz

Power Supply: 18 VAC, 1 Amp

Line Input:

¼ Inch TRS

Impedance: 1 Mega Ohm

Max Input Level: +21 dBu

Mic Input:

Balanced XLR

Impedance: 2.5k Ohm

Max Input Level: +21 dBu

Analog Output:

¼ Inch & XLR

Impedance: 60 Ohm Balanced / 30 Ohm Unbalanced

Max Output Level: +21 dBu

Digital Output:

USB 2.0

Sampling rate: 48 kHz

Converter: 16 bit

Insert Send:

¼ Inch TRS

Impedance: >100 Ohm

Max Output Level: +21 dBu

Insert Return:

¼ Inch TRS

Impedance: >10k Ohm

Max Input Level: +21 dBu

Dimensions: 198mm(W) x 145mm(D) x 55mm(H)

(Approximately: 8" x 5.5" x 2.5")

Weight: 910 g - 2 lb

Included Accessories:

Power Supply Adapter

USB Cable

All Specifications are subject to change without notice.

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