Model 523A
Microphone Lifter Exciter Line Amplifier

The Sonic Imagery Labs Model 523A is a high performance phantom powered line amplifier designed for professional audio applications. The Model 523A's prime directive is to amplify signals from low-output dynamic and ribbon microphones with a high degree of accuracy and fidelity.

Equipped with dual precision current sources driving a differential super-matched FET-based gain stage and line driver, the Model 523A maintains high common mode noise rejection performance. This performance also prevents signal degradation over long cable runs in the studio or on the performance stage.

Microphone loading can be user selected. The 523A has three user selectable termination settings. Different loadings on the microphone output can produce subtle changes in microphone "color." For the standard Model 523A, they are 600, 3.6K and 10.6K ohm. OPTION 003 provides other termination-loading impedances which can be factory installed at the time of purchase. See additional options.

The high pass filter selection provides three user selectable bandwidths. The 3dB roll up points on the standard Model 523A are 200Hz, 18Hz or flat to DC (0Hz). This allows the user to control proximity effects, rumble and vibration effects. OPTION 002 provides other 3dB roll up points which can be factory installed at the time of purchase.

The Sonic Imagery Labs Model 523A provides for three user selectable gain steps. When the 523A is connected to a typical mixing console, standalone microphone preamp or microphone interface, gains of 8dB, 16dB or 25dB can be selected. This equates to the LOW, MID and HIGH settings. The 523A will not "hard clip" but, at very extreme sound pressure levels or transients, will tend to "soft clip" and compress. This soft compression clipping will produce primarily 2nd and 4th harmonic content similar to audio exciters.

The Sonic Imagery Labs Model 523A is operated by phantom power. A green LED will illuminate if phantom power is present. The Model 523A will not pass-thru phantom power to the microphone, making it safe to use for ribbon or dynamic microphones. If your mixer, mic pre or interface cannot provide 48V phantom power, the Model 523A can be powered by an external 48V power supply such as the optional Sonic Imagery Labs Model 1224A "wall wart" power supply. The 1224A can power up to 15 Sonic Imagery Labs Model 523A units using the daisy chain power connection setup.

Features:

- Choice of three selectable Hipass Filters (HIGH PASS)
- Choice of three selectable Termination Impedances (INPUT Z)
- Choice of three selectable Line Gains (GAIN)
- Operates with Phantom Power or External 48V Power
- External power can be daisy chained to additional units
- Soft compression clipping at extreme mic levels (EXCITER)
- Rack tray mountable - Removable feet
- Strapable to microphone stand
- Particular emphasis on audio performance
- Designed, assembled and produced in the USA
- 3 Year Warranty

Applications:

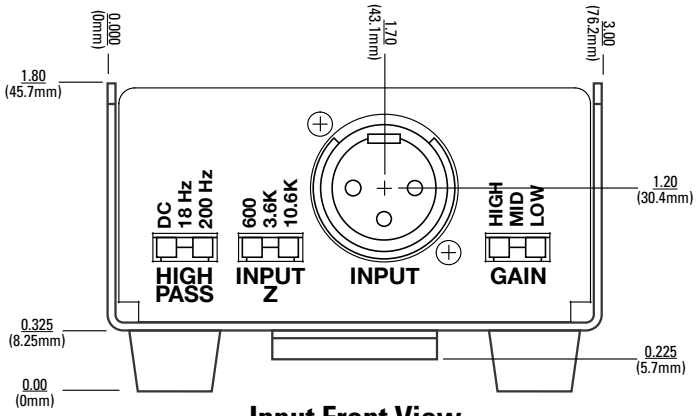
- Podcasting, DJ, Stage Gain, Live performance
- Long cable run driver
- Cable splitter driver
- High Performance Balanced Microphone Gain Amp
- High Performance A/D and D/A Balanced front end Gain

REV A, 1.20.2025

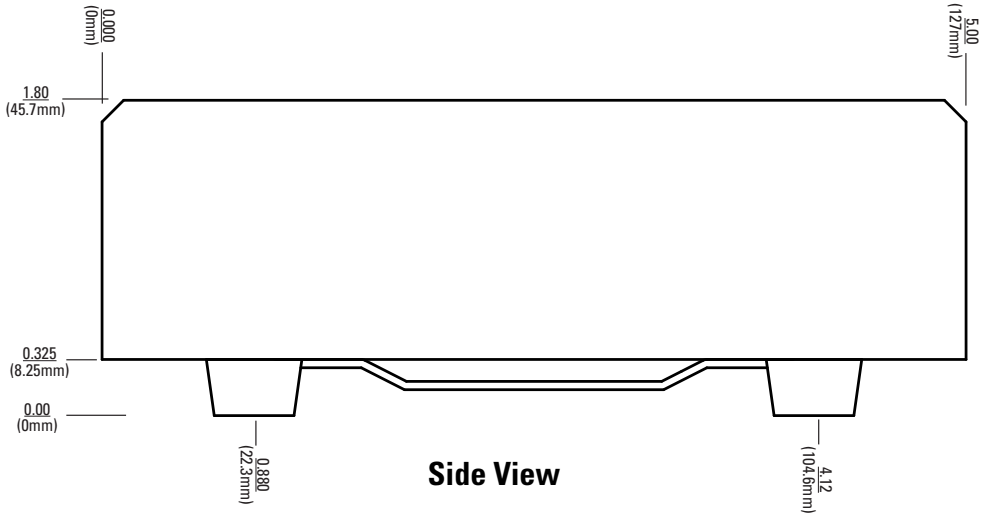
Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

Enclosure Dimesions:



Input Front View



Side View

RACK MOUNTING

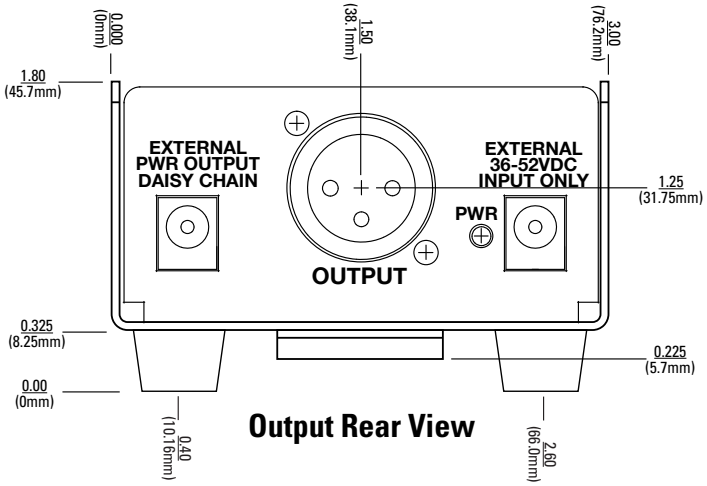
The Sonic Imagery Labs Model 523A allows the rubber feet to be removed without the enclosure falling apart. This facilitates the mounting of the unit to an 19 inch EIA 1 space height (1.75") rack shelf. Up to 5 units can be mounted within a 17 inch wide shelf. The feet are secured to the 523A with SAE #4-40 screws.

REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

Enclosure Dimesions:



Output Rear View

MICROPHONE STAND MOUNTING

The Sonic Imagery Labs Model 523A enclosure has a strap clip welded to the enclosure bottom. 1/16" closed cel neoprene foam padding provides for some griptionwhen strapped with the included hook and loop strap.

STANDARD FACTORY INSTALLED OPTIONS

The Sonic Imagery Labs Model 523A can be purchased with other factory installed options at the time of purchase from www.sonicimagerylabs.com.

OPTION 003A MIC TERM/LOADING -> 1.2K, 4.2K, 11.2K
OPTION 003B MIC TERM/LOADING -> 2.2K, 4.7K, 12.2K
OPTION 003C MIC TERM/LOADING -> 2.7K, 5.6K, 15K
OPTION 003D MIC TERM/LOADING -> 4.3K, 8K, 15.6K

OPTION 002A HIPASS DC (0Hz), 22Hz, 150Hz
OPTION 002B HIPASS DC (0Hz), 22Hz, 180Hz
OPTION 002C HIPASS DC (0Hz), 18Hz, 80Hz
OPTION 002D HIPASS DC (0Hz), 18Hz, 120Hz
OPTION 002E HIPASS DC (0Hz), 18Hz, 150Hz
OPTION 002F HIPASS DC (0Hz), 18Hz, 180Hz

Contact factory for customization or other values. OPTION 001 is only available on the Sonic Imagery Labs Model 821A High Performance True Differential Balanced Line Preamp.

REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

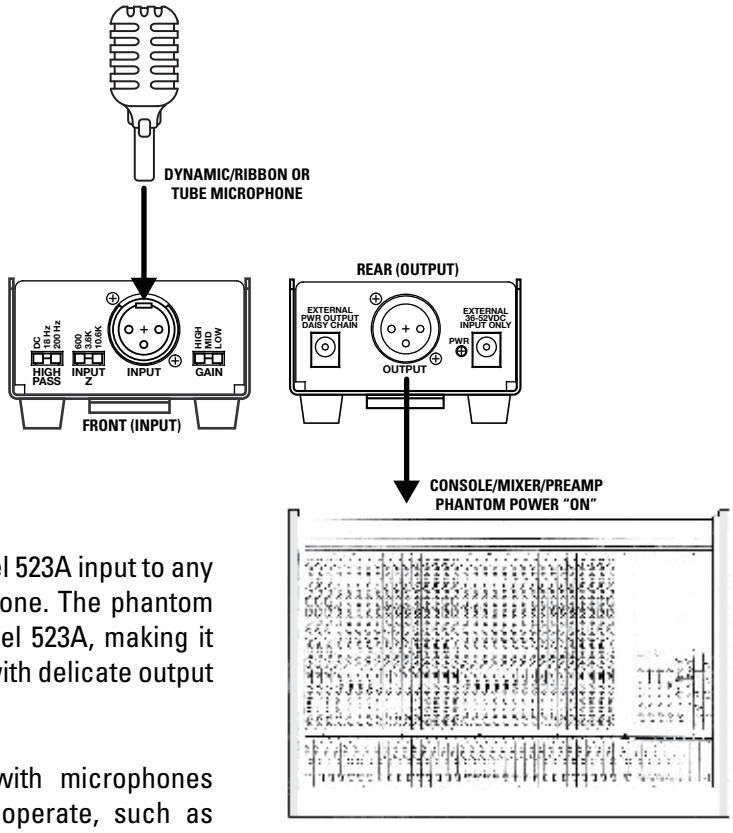
Model 523A
Microphone Lifter Exciter Line Amplifier

1. QUICK START BASIC CONNECTION

Connect the Sonic Imagery Labs Model 523A output to a mixer, console, preamplifier, audio interface or any other source with the ability of providing +48 volt phantom power. When driving long cable runs, the Model 523A should be closer to the microphone to increase signal to noise ratio and improve the rejection of common mode noise and hum pickup. See microphone stand mounting as an example. 18 inch M-F XLR cables are available from www.sonicimagerylabs.com for this purpose.

3. QUICK START BASIC CONNECTION

Start with the gain at minimum on your preamp, interface, console or mixer. Set the 523A gain switch to LOW, MID or HIGH. Slowly turn up the preamp, interface, console or mixer gain to your desired level.



2. QUICK START BASIC CONNECTION

Connect the Sonic Imagery Labs Model 523A input to any dynamic, ribbon or tube type microphone. The phantom power will not pass through the Model 523A, making it safe to use with ribbon microphones with delicate output transformers.

In order to use the Model 523A with microphones that need +48V phantom power to operate, such as condenser microphones, a dedicated external phantom power interface will be needed to power this type of microphones internal electronics.

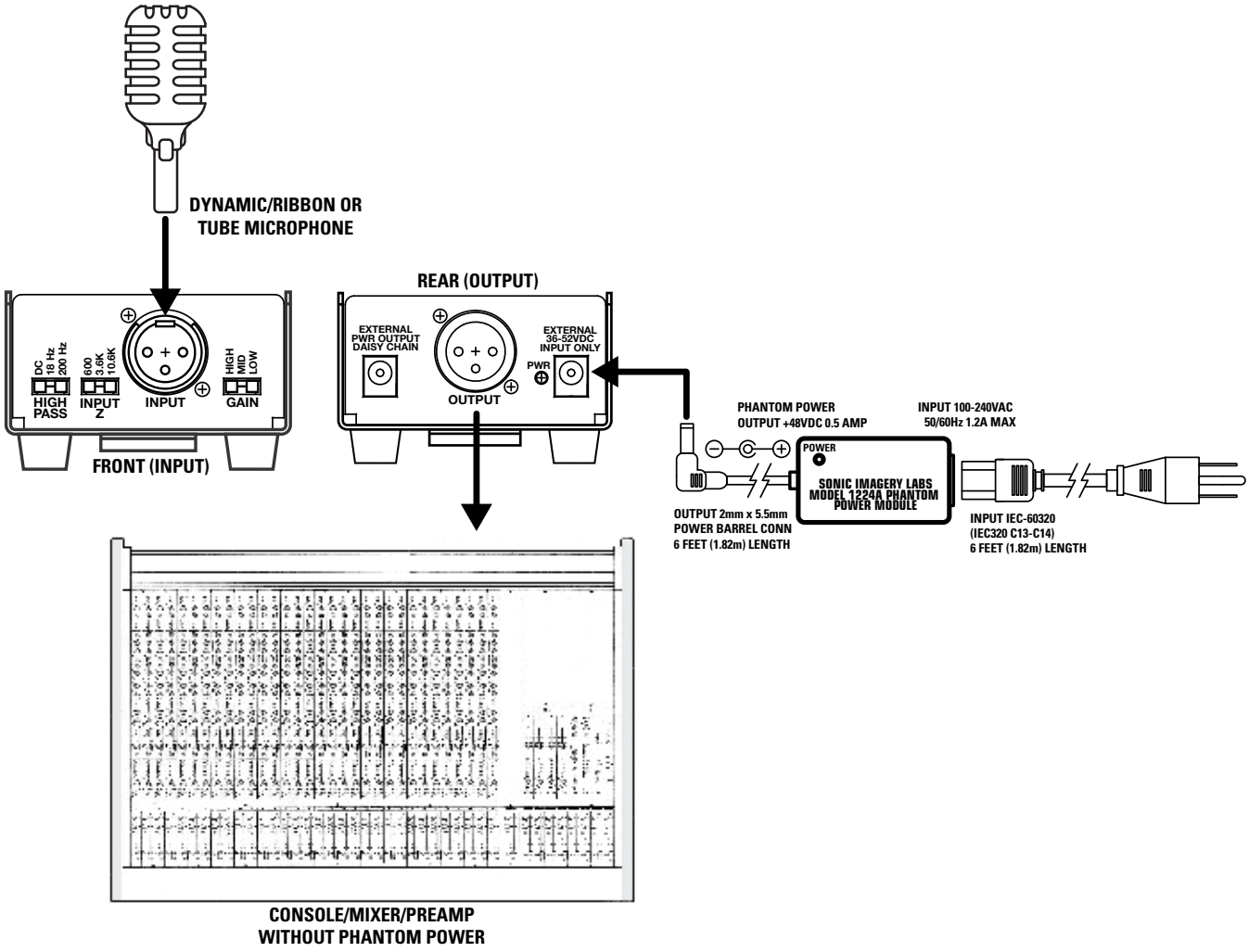
REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

EXTERNAL PHANTOM POWER

If your mixer, console, preamp or audio interface does not provide +48V phantom power, the Model 523A can be powered by an external 48V power supply such as the optional Sonic Imagery Labs Model 1224A external power supply. The 1224A can power up to 15 Sonic Imagery Labs Model 523A units using the daisy chain power connection setup.



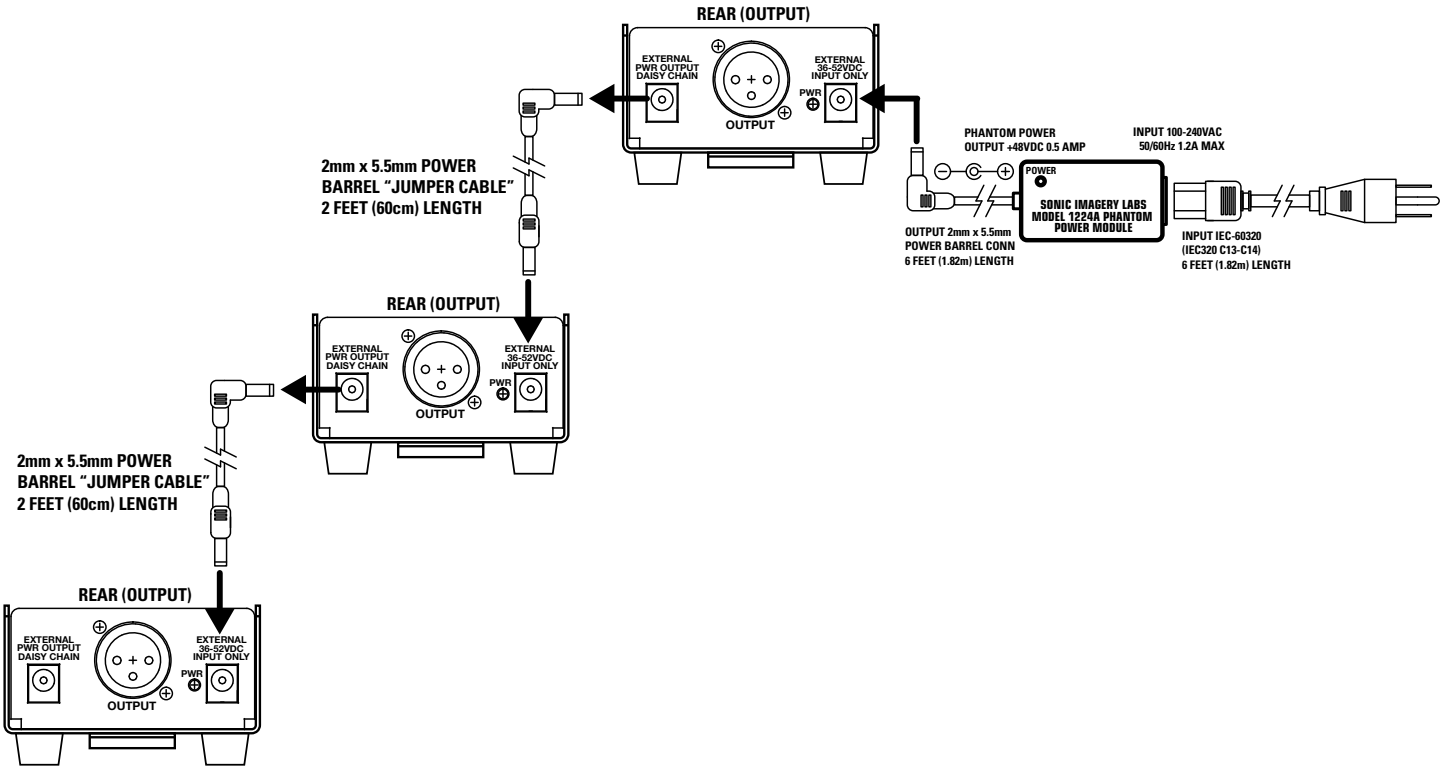
REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

EXTERNAL PHANTOM POWER DAISY CHAINING

The optional Sonic Imagery Labs Model 1224A can power up to 15 Sonic Imagery Labs Model 523A units using the daisy chain power connection setup shown below. Additional 2 foot (60cm) daisy chain "Jumper Cables" can be purchased at www.sonicimagerylabs.com.



REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

GAIN COMPRESSION, SOFT CLIP, EXCITER

The 523A will not "hard clip" but, at very extreme sound pressure levels or transients, will tend to "soft clip" (See Figure 4.) and gain compress. This soft compression clipping will produce primarily 2nd and 4th harmonic content similar to audio exciters. See Figure 1 and 2.

Gain compression is a phenomena which will occur if the Model 523A balanced input is over driven. If the 523A GAIN is set to HIGH, this starts to occur at approximately -28dbV at the balanced input. At this level and above, the output of the 523A will start soft clipping. Most microphones nominal output level is -65 to -55dBm. See Figure 3.

At the onset of clipping the harmonic content will also increase. Primarily 2nd and 4th harmonics will increase and gain compression approaches zero gain. See Figure 2.

Harmonic Content Characteristics (Gain=High, -53dbV Input, 1Khz Standard Console-Mixer Emulation Test Fixture

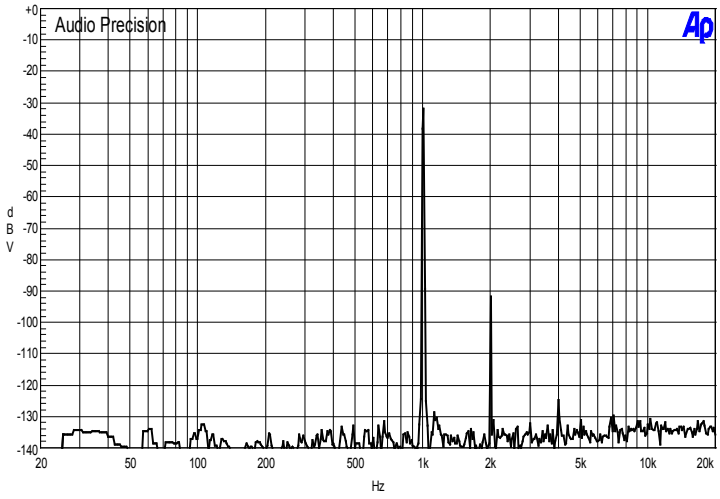


Figure 1. No Clipping or Overdrive

Harmonic Content Characteristics (Gain=High, -29dbV Input, 1Khz Standard Console-Mixer Emulation Test Fixture

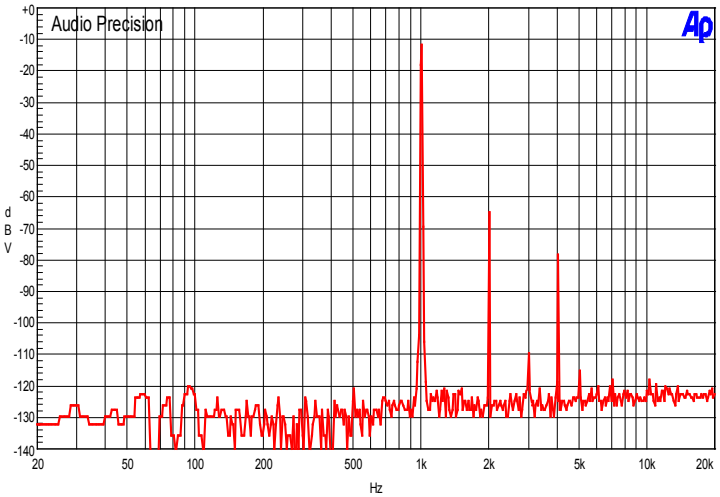


Figure 2. Soft clipping, Exciter Overdrive

Gain Compression Characteristics (Gain=High, -100 to +20dBV power sweep Input, 1Khz into Standard Console-Mixer Emulation Test Fixture

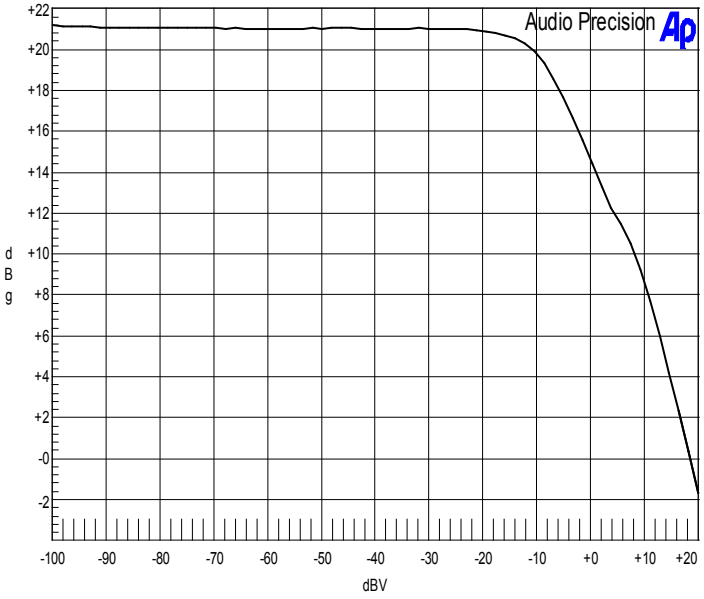


Figure 3. Output Gain Compression

REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

Soft Clipping Characteristics (Gain=High, -20dbV Input, 1Khz Standard Console-Mixer Emulation Test Fixture

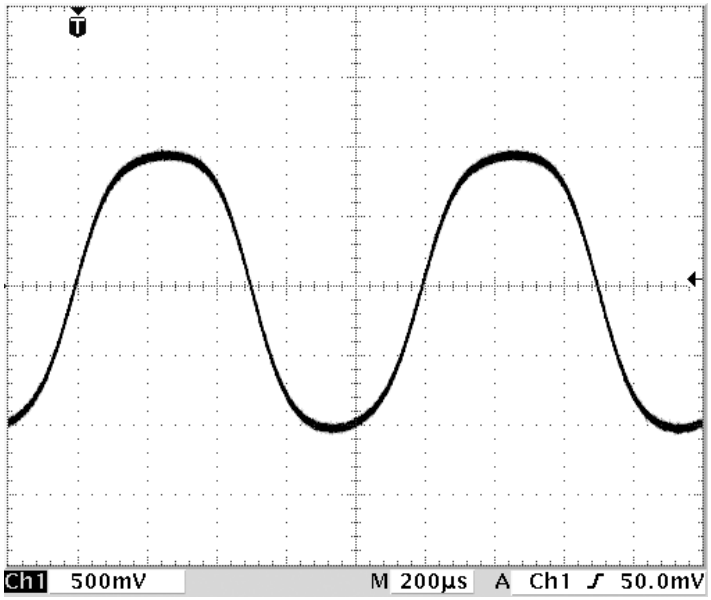


Figure 4. Soft Clipping, Voltage verse Time.

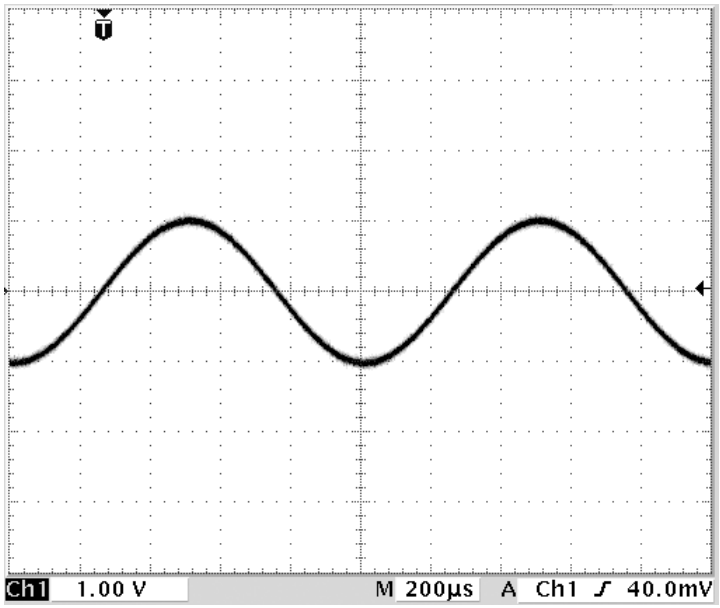


Figure 4a. No Clipping, Voltage verse Time. GAIN=HIGH, -40dBV input, 1Khz Standard Console-Mixer Emulation Test Fixture

GAIN CHARACTERISTICS

The Sonic Imagery Labs Model 523A provides for three user selectable gain steps. When the 523A is connected to a typical mixing console, standalone microphone preamp or microphone interface, gains of 8dB, 16dB or 24dB can be selected. The output driver stage is a differential current source/sink stage. The current is converted to a voltage across the console-mixers input impedance. The precise gain of the Model 523A is ultimately determined by the input impedance of the console, standalone microphone preamp or microphone preamp interface. Most input stage impedances range from 1.2K to 3K ohm, with 2.4K being typical. Figure 5 illustrates the typical input stage and is the test fixture used to confirm proper operation for the Model 523A.

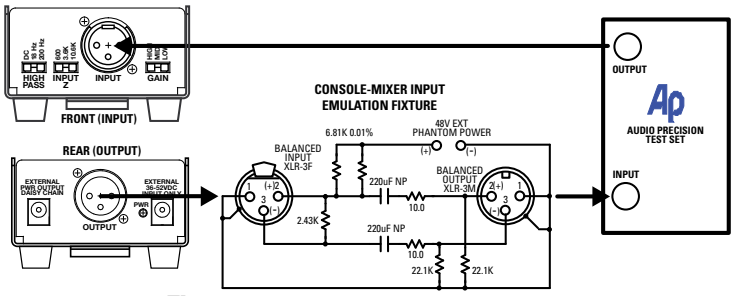
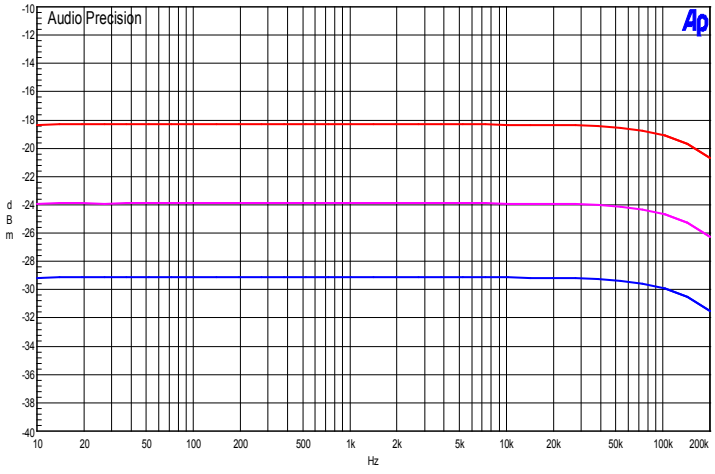


Figure 5. Console emulation fixture.

Gain and Frequency Response Characteristics (Gain=High, Medium, and Low , HIPASS disabled (DC) -42dbV Input, 1Khz, Standard Console-Mixer Emulation Test Fixture.



REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

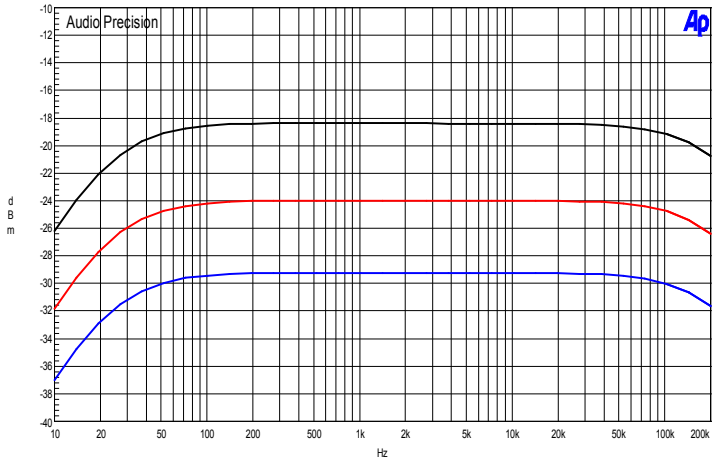
Model 523A
Microphone Lifter Exciter Line Amplifier

HIPASS FILTER CHARACTERISTICS

The high pass filter selection provides three user selectable bandwidths. The 3dB roll up points on the standard Model 523A are 200Hz, 18Hz or flat to DC (0Hz). This allows the user to control proximity effects, rumble and vibration effects. OPTION 002 provides other 3dB roll up points which can be factory installed at the time of purchase. (See Page 3)

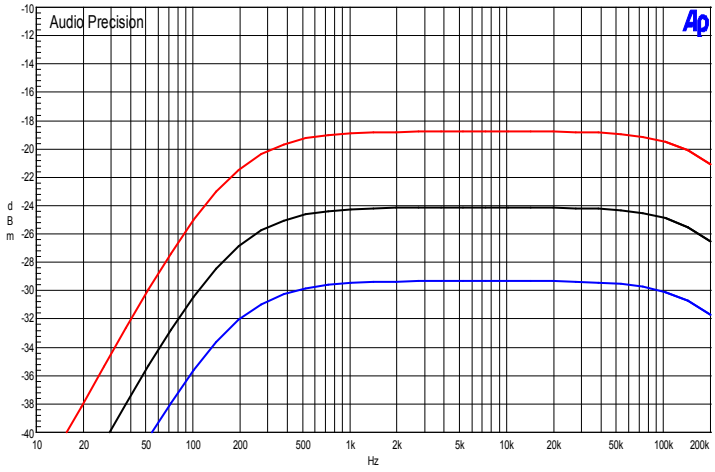
Hipass Frequency Response Characteristics

(Gain=High, Medium, and Low , HIPASS 18Hz, -42dbV Input, 1Khz, Standard Console-Mixer Emulation Test Fixture)



Gain and Frequency Response Characteristics

(Gain=High, Medium, and Low , HIPASS 200Hz, -42dbV Input, 1Khz, Standard Console-Mixer Emulation Test Fixture)

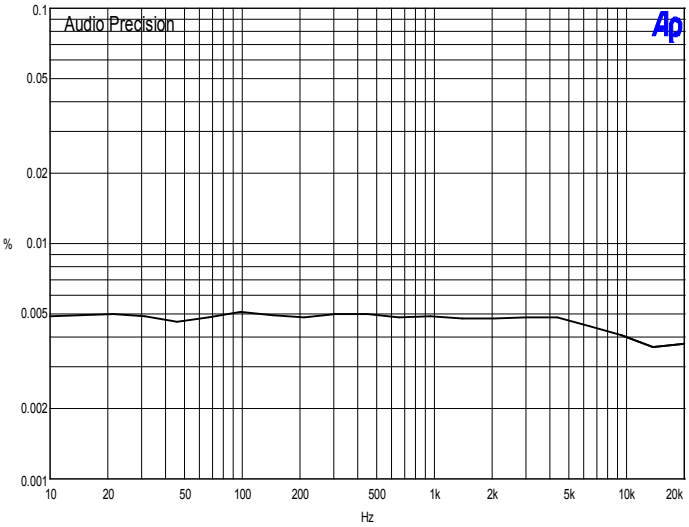


HARMONIC DISTORTION CHARACTERISTICS

The Sonic Imagery Labs Model 523A provides very low harmonic distortion performance with input program material levels below -35dBV to -70dBV. For testing and production purposes, all units are THD tested at -40dBV.

Gain and Frequency Response Characteristics

(Gain=High, HIPASS DC, -40dbV Input, 20-22Khz BW, Standard Console-Mixer Emulation Test Fixture)



REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

ACCESSORIES

The Sonic Imagery Labs Model 1224A "wall wart" power supply. The 1224A can provide 48V DC phantom power to operate up to 15 Sonic Imagery Labs Model 523A units using the daisy chain power connection setup. The 1224A can accept 100Vac to 240Vac- 50/60Hz at the standard IEC320 male input. US domestic orders include a 6ft (183cm) IEC320-C13 to NEMA5-15P 3 Pin Male Plug.

Model 1224A External 48V Phantom Power Supply

The Sonic Imagery Labs Model 1124A "Jumper Cable" allows the user to daisy chain multiple Sonic Imagery Labs Model 523A units. The Model 1124A "Jumper Cable" is a 23.6 inches long (60cm) with a straight 2.1mm female plug and a right angle 2.1mm female plug.

Sonic Imagery Labs Model 1124A "Jumper Cable"

The Sonic Imagery Labs Model 1324A is an 18 inch (45cm) long male 3 pin XLR to female 3 pin XLR cable to facilitate the connection of a microphone to a Sonic Imagery Labs Model 523A in the microphone stand mounting application.

Model 1324A 18 inch Female XLR-3 to Male XLR-3

REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

Specifications (Ta=25°C, VPP=+48V unless otherwise noted conditions)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{PP}	Phantom Supply Voltage	-	42	48	52	V
		-	-	-	-	-
I_{CCQP}	Quiescent Current Phantom Power	48V	5	6	7	mA
I_{CCGH}	-40dBV 1Khz Current Phantom Power	48V Gain HIGH	4.1	5	6	mA
I_{CCGM}	-40dBV 1Khz Current Phantom Power	48V Gain MED	2.5	3	4	mA
I_{CCGL}	-40dBV 1Khz Current Phantom Power	48V Gain LOW	2	2.1	2.3	mA
-	-	-		-	-	-
V_{OFFH}	Output Offset Voltage	Gain HIGH	0.25	1	1.5	mV
V_{OFFM}	Output Offset Voltage	Gain MED		>0.5	1	mV
V_{OFFL}	Output Offset Voltage	Gain LOW	-	>0.3	0.4	mV
V_{CM-IN}	Input Common-Mode Range	-	-	2	-	V
CMRR	Common-Mode Rejection Ratio	-	-	67	-	dB
PPSRR	Phantom Power Supply Rejection Ratio	-	-	>69	-	dB
		-	-			

AC Electrical Characteristics (Ta=25°C, VPP=+48V unless otherwise noted conditions)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
SR	Slew Rate	R_L=2.4KΩ	11	12	13	V/uS
SR	Slew Rate	R_L=1.2KΩ	11	12	13	V/uS
Iout	Maximum Peak Output Drive Current	R_L=2.4KΩ	-	8	-	mA

Design Electrical Characteristics (Ta=25°C, VPP=+48V unless otherwise noted conditions)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
THD	Distortion+Noise (-40dBV input)	R_L=2.4KΩ Gain HIGH 20-22kHz BW 1k	-	0.005	0.0055	%
$Input_{MAX}$	Input Max Level	1% THD at 1Khz	-	-18	-20	dBV
-	-	-	-	-	-	-
e_n	Input Refered Noise Voltage	Input shorted to ground	-	5.4	-	nV√ Hz
i_n	Input Refered Noise Current	f=1kHz	-	<100.0	-	pA√ Hz
f_U	Unity Gain Frequency	Small-signal BW at unity gain (ft)	-	2	-	MHz
-	-	-	-	-	-	-
-	-	-	-	-	-	-
			-		-	

REV A, 1.20.2025

Sonic Imagery Labs
P.O. Box 20494
Castro Valley, California 94546
P:(510)728-1146 F:(510)727-1492
www.sonicimagerylabs.com

Model 523A
Microphone Lifter Exciter Line Amplifier

WARRANTY

All products are warranted against defects in materials and workmanship for a period of three years from the date of shipment. Sonic Imagery Labs will, at our discretion, repair or replace the product under this warranty only if factory inspection reveals evidence of such defects. Products must be returned to Sonic Imagery Labs in original packaging materials for inspection, shipped prepaid. This warranty is non-transferrable, and no other warranty is expressed or implied.

SUPPORT

1. Call or email us for a Return Authorization number.

2. Pack the unit in its original packing materials.

3. Write the Return Authorization number on the outside of the box. Be sure to include your name, address and phone information in case we need to talk with you.

4. Ship it to Sonic Imagery Labs.

5. Our shipping address is:
Sonic Imagery Labs, PO Box 20494, Castro Valley, CA 94546

Just do those 5 things, and repairs made in warranty will cost you only the one way freight fee. We will prepay the return freight. Out of warranty items will be quoted via email or phone.