Operations Manual

Model 898B
8 Channel Active Balanced/Unbalanced Line Level Translator

REV 0, 12.30.2012

Sonic Imagery Labs
P.O. Box 20494
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www.sonicimagerylabs.com

Explanation of graphical symbols

The lightning flash with arrowhead symbol, within an equalateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The exclamation point within an equalateral triangle is intended to alert users to the presence of important operating and maintence (servicing) instructions in the literature accompanying the product.

Explicacion de simbolos

El rayo inscrito en un tríangulo equilátero alerta al usuario de la presencia de voltaje peligroso no aislado dentro del producto, que pude ser de nivel suficiente como para constitutuir riesgo de descarga eléctrica para las personas.

El signo de exclamación inscrito en un triángulo equilátero alerta a los usuarios de la presencia de instrucciones importantes de funcionamiento y mantenimiento (servicio) en el manual que acompaña el producto.

Erklärung der bildsymbole

Das Blitzzeichen innerhalb eines gleichseitigen Dreiecks warnt den Benutzer vor nicht-isolierter, gefährlicher Spannung im Inneren des Gerätes. Diese Spannung ist hoch genug, um Personen durch elektrischen Schlag zu gefährden.

Das Ausmfungszeichen innerhalb eines gleichseitigen Dreiecks weist den Benutzer auf wichtige Bedienungs-und Wartungsanweisungen hin, die in den gerätebegleitenden Unterlagen aufgeführt sind.

Explication des symbole graphiques

Le symbole éclair avec pointe de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "tension non-isolée dangereuse" d'ampleur suffisante pour constituer un risque de choc électrique pour l'être humain.

Le point d'exclamation à l'intérieur. d'un triangle équilatéral est employé pour alerter les utilisateur de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans les documents accompagnant l'appareil.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

WARNING: To prevent fire or electric shock, do not expose this equipment to rain or moisture.

PRECAUCIÓN
RIESGO DE DESCARGA ELÉCTRICA. NO LO ABRA

PRECAUCIÓN: Para reducir el riesgo de descarga eléctrica, no quite la tapa. No hay en el interior nada para ajustar por el usuario. Refiera sus reparaciones a personal cualificado de servicio.

AVISO: Para impedir fuegos o descargas eléctricas, no exponga este equipo a la lluvia o la humedad.

VORSICHT
GEFAHR EINES ELEKTRISCHEN SCHLAGES. NICHT ÖFFNEN

VORSICHT: Um Gefährdung durch elektrischenSchlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Es befinden sich keine vom Benutzer reparierbaren Teile im Inneren des Gerätes. Überlassen Sie jegliche Raparatur dem qualifizierten Fachmann.

WARNUNG: Um die Gefahr eines Brandes bzw. eine Verletzung durch elektrischen Schlag zu vermeiden, solten Sie das Gerät niemals Regen oder Feuchtigkeit aussetzen.

ATTENTION!
RISQUE DE CHOC ÉLECTRIQUE
NE PAS OUVRIR

ATTENTION: Pour éviter les risques de choc électrique, ne pas enlever le couvercle. Cet appareil ne comporte aucune pièce pouvant être réparée par l'utilisateur. Confier l'entretien à un technicien qualifié.

AVERTISSEMENT: Pour éviter le risque de choc électrique ou d'incendie, n'exposez cet appareil ni à l'humidité excessive ni aux projections d'eau (pluie, ruissellement, etc...)

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DECLARATION OF CONFORMITY for
Sonic Imagery Labs, MODEL 898B, Level Translator.

Sonic Imagery Labs declares as its sole responsibility that the above named product is in compliance with the EMC Directive 89/336/EEC and conforms to the requirements of the Harmonized Product Standards EN 55013, (Product Emissions), and EN55020, (Product Immunity).

Sonic Imagery Labs further declares as its sole responsibility that the above named product is in compliance with the Low Voltage Directive 73/23/EEC and conforms to the requirements of one or more of the following Harmonized Product Standards:
HD 195 S6; 1989, (Mains Operated Electronic Apparatus);
EN60065 04.94, (Mains Operated Electronic Apparatus);
IEC 65:1992 Modified, (Mains Oper&ted Electronic Apparatus).

CE

DECLARATION OF CONFORMITY for
Sonic Imagery Labs, MODEL 898B, Level Translator.

Sonic Imagery Labs declares as its sole responsibility that the above named product is in compliance with and that the product specified above, to which this declaration relates, conforms to the following mentioned Directives and Standards:

Directive; Low Voltage Directive (LVD) 2006/95/EC
EN 61010-1 2001 'Safety requirements for electrical equipment tor measurement, control and laboratory use. General requirements"

Directive: Electromagnetic Compatibility Directive (EMC) 2004/108/EC
Standards: EN 55022: 2006 "Limits and methods measurement of radio disturbance characteristics of information technology equipment", Class B,
EN 61000-4-2 (IEC 801-2) "Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques Section 2: Electrostatic discharge immunity test. Basic EMC Publication",

EN 61000-4-3 (IEC 801-3) "Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques Section 3: Radiated, radio-frequency, electromagnetic field immunity test",
EN 61000-4-8 "Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 8: Power frequency magnetic field immunity test. Basic EMC Publication".

Declaration of Conformity

We declare as our sole responsibility that this product is in compliance with the EMC Directive 89/336/EEC and conforms to the requirements of the Harmonized Product Standards EN 55013 (Product Emissions), and EN 55020 (Product Immunity).

Declaración de Conformidad

Declaramos bajo nuestra propia responsabilidad que este producto cumple las normas EMC 89/336/EEC y se rige por los estandares de producto armonizado EN 55013 (emisiones de producto) y EN 55020 (immunidad de producto).

Korformitätserklärung

Wir erklären in alleiniger Verantwortung, daß dieses Produkt der EMV Verordnung 89/336/ EEC entspricht und die Erfordernisse der Einheitlichen Produktnorm EN 55013 (Störstrahlung), sowie EN 55020 (Strahlungssicherheit) erfüllt.

Déclaration de Conformité

Nous déclarons sous notre seule et unique responsibilité que ce produit est conforme à la directive Européenne 89/336/EEC, et qu'il répond également aux normes des standards d'harmonisation EN 55013 (Émission des produits), ainsi qu'à la norme EN 55020 (Immunité des produits).

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Additional Safety Information:

1. READ INSTRUCTIONS
All the safety and operating instructions of your Sonic Imagery Labs equipment should be read before power is applied to the equipment.

2. RETAIN OWNERS MANUAL
These safety and operating instructions should be retained for future reference.

3. HEED WARNINGS
All warnings on the equipment and in the operating instructions are important and should be followed.

4. FOLLOW INSTRUCTIONS
All operating instructions are important and should be followed.

5. HEAT
The equipment should be kept away from areas of high temperature, i.e., heater vents, radiators, stoves/ovens, fireplaces, etc.

6. VENTILATION
The equipment should be used in an area suitable for proper ventilation. Care should be taken not to impede airflow in and around chassis.

7. WATER AND MOISTURE
The equipment should not be used in or around water, such as a bathtub, sink, or swimming area. Also, the equipment should not be used in areas prone to flooding, such as a basement.

8. POWER SOURCES
The equipment should be connected only to a power source of the same voltage and frequency as that listed on the rear panel below the power entry module.

9. POWER CORD PROTECTION
Power cords should be arranged so they do not interfere with the movement of objects in the room: people, fan blades, utility carts, etc. Also, care should be taken that the power cord is not pinched or cut, and placed so it is not in danger of being cut or pinched, as in under a rug, around a tight corner, etc.

10. POWER CORD GROUNDING
The power cord is of a three wire grounded type, designed to reduce the risk of electric shock sustained from a live chassis. It is assumed to be of suitable length for most uses of this equipment. The use of extension cords and power strips is discouraged unless they are of suitable rating to deliver the required total current for safe operation of all connected equipment. Furthermore, extension cords or power strips must provide the same three wire grounded connection. It is important that the blades of the equipment's plug be able to fully insert into the mating receptacle. Never remove the round grounding pin on the plug in an attempt to mate a two wire ungrounded receptacle: use a grounding adapter with the grounding tab or wire suitably connected to earth ground.

11. NON USE PERIODS
During periods of extended non use, the power cord should be unplugged from the power source.

12. CLEANING
The equipment should be cleaned only as detailed in the operating instructions.

13. OBJECT AND LIQUID ENTRY
Care should be taken so that objects and/or liquids such as cleaning fluid or beverages, are not spilled into the enclosure or chassis of the equipment.

14. DAMAGE REQUIRING SERVICE
Sonic Imagery Labs equipment should be serviced by qualified service personnel when:
A. The power supply cord or plug has been damaged, or
B. Objects have fallen onto, or liquid has been spilled into the equipment or,
C. The equipment has been exposed to rain or,
D. The equipment does not appear to operate normally or exhibits a marked change in performance, or
E. The equipment has been dropped, or the chassis has been damaged.

15. SERVICING
The user should not attempt to service the equipment beyond that which is described in the operating instructions. All other service should be referred to qualified service personnel.

16. CARTS AND STANDS
The equipment should be used with carts or stands only of sufficient strength and stability for the use intended. An equipment and cart combination should be moved with care. Sudden stops and starts, excessive force, and uneven surfaces may cause the equipment and cart combination to topple.

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Additional Safety Information:

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE MUST BE EARTHED.
The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

• The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.

• The core which is coloured blue must be connected to the terminal marked N or coloured black.

• The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the unit's chassis.

CONDUCTOR		WIRE COLOR	
		Normal	Alternative
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GRN/YEL	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously.

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Warranty Information:

Limited Warranty

The Sonic Imagery Labs Model 898B is designed and manufactured for use in applications in the areas of scientific research, data aquisition, broadcast audio, recording studios and playback/ transport audio systems.

Sonic Imagery Labs warrants that the Model 898B manufactured by Sonic Imagery Labs, when properly installed, used and maintained in accordance with instructions contained in the operators manual, will perform according to the specifications set forth in the operators manual and specifications.

Sonic Imagery Labs expressly warrants that the 898B will be free from defects in material and workmanship for three (3) years from the date of manufacture. Sonic Imagery Labs' obligations under this warranty will be limited to repairing and replacing, at Sonic Imagery Labs' option, the part or parts of the Model 898B which prove defective in material or workmanship within three (3) years from the date of manufacture, provided that the purchaser gives Sonic Imagery Labs prompt notice of any defect or failure and satisfactory proof thereof. Products may be returned by the purchaser only after a Return Authorization number (RA) has been obtained from Sonic Imagery Labs and the purchaser will prepay all freight charges to return any products to the Sonic Imagery Labs factory. Sonic Imagery Labs, may at its option, require proof of the original date of purchase. Products repaired under warranty will be returned freight prepaid via USPS, UPS, Fed-EX, DHL, or other freight carrier deemed economical by Sonic Imagery Labs, to any location upon the planet Earth. Outside the planet Earth, products will be returned freight collect.

Sonic Imagery Labs warrants to the original purchaser of any Sonic Imagery Labs equipment, that the product is in working condition, according to its specifications at the time of shipment, for a period of three (3) years from the date of original manufacture. Should the equipment malfunction during the warranty period, Sonic Imagery Labs will at its discretion repair or replace the equipment upon receipt with an equivalent. Any replaced parts become property of Sonic Imagery Labs.

This warranty does not apply to the software component of the product or a product which has been damaged due to accident, misuse, abuse, improper installation, usage not in accordance with product specifications and instructions, natural or personal disaster, or unauthorized alterations, repairs or modifications.

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Model 898B - Octal Balanced Unbalanced Level Translator

Introduction

Thank you for purchasing the Sonic Imagery Labs Model 898B Octal Balanced/Unbalanced Line Level Translator. The Sonic Imagery Labs Model 898B is designed and manufactured for use in applications in the areas of scientific research, data aquisition, broadcast audio, recording studios and playback-transport audio systems. Highlighted features include the following:

- **8 Channels of -10dBV to +4dBm Balanced Conversion**
- **8 Channels of +4dBm to -10dBV Unbalanced Conversion**
- **Precision Analog Line Receivers**
- **Precision Balanced Line Drivers**
- **Low Total Harmonic Distortion and Noise**
- **DC to 200Khz Bandwidth (direct coupled)**
- **High Current Output Drive in both directions**
- **+22.3dBu Maximum Levels**
- **Ability to drive 300Ω Loads**
- **RCA & XLR Interface Connections**
- **Channel to Channel Crosstalk > -110dB**
- **Rugged Steel Enclosure**
- **Hand Assembled and Tested With Care**
- **Made in the USA**

Important

Before actually using the Sonic Imagery Labs, Model 898B, read this manual thoroughly at least once, so you will know where to return when you need answers.

General Description

The Sonic Imagery Labs, Model 898A is a high performance professional grade tool used to convert single-ended unbalanced -10 dBV consumer line level analog audio signals to balanced +4 dBm professional line levels - and vice versa. It is only product available on the market that provides 8 channels each direction, simultaneously. The 898B does not use transformers and it's active circuitry is specifically designed to be uncolored and reproduce at it's outputs what is input to a high degree of accuracy.

Unbalanced input connections typically should be kept as short as possible to prevent the undesirable effects of microphonics, hum and noise pickup. The Model 898B allows the conversion to and from balanced lines that can be run up to 500 feet without audible loss of audio quality.

Signal to noise and common mode rejection performance are nearly perfectly preserved by using the 898B, since it incorporates precision trimmed components that are fully specified for high performance analog audio frequency applications and have outstanding AC characteristics, including ultra low harmonic distortion (0.0006% at 1KHz), the ability to drive capacitive lines and remain stable, high slew rate (15V/uS) and DC to 200Khz bandwidth.

The Sonic Imagery Labs Model 898B's rugged steel one rack space package and performance provides the answer to the most demanding applications requiring precision level conversion and input - output line balancing and unbalancing.

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Model 898B - Octal Balanced Unbalanced Level Translator

Initial Set-Up

During unpacking, be careful not to damage the 898B. Save the carton and packing material. You may need them to transport your 898B sometime in the future. In addition to the 898B the package should contain the following additional items:

AC Power Cord*
Rack Mounting Screw Kit (Qty 4, 10-32x 3/4 long)
Operations Manual
Domestic and International Fuse Set (Domestic fuse shipped installed)

*Due to the variety of AC plugs used throughout the world, this unit is shipped **without** an AC power cord when shipped outside of the United States, Mexico or Canada.

After unpacking, check the unit for any evidence of damage due to rough handling during transport. Contact the factory representative at **www.sonicimagerylabs.com** if you have any questions.

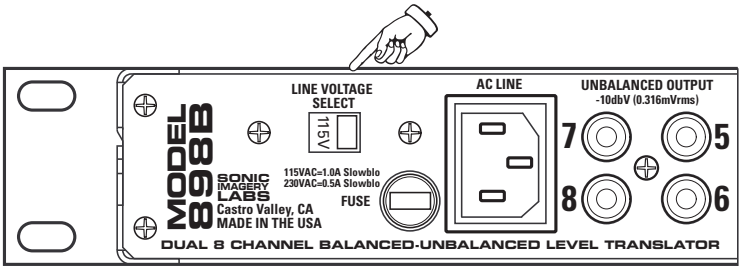
Line Voltage Selection:

For equipment shipped outside of the United States, Mexico or Canada. If it is necessary to change the Line Voltage Select setting of the unit to match your area or country, proceed as follows:

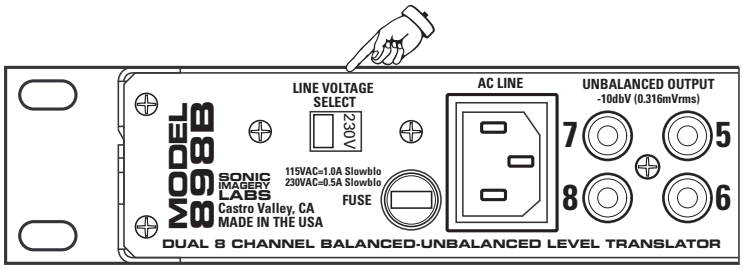
ALWAYS DISCONNECT THE POWER LINE BEORE MAKING THESE CHANGES.

1. Locate the LINE VOLTAGE SELECT switch on the rear panel. It is at the far left as one faces the rear of the unit. See following diagrams.

2. Using a flatbladed screwdriver, slide the selector to the left of right until the voltage corresponding to the voltage requirements for your area appear.



With the LINE VOLTAGE SELECT set to 115V as shown above, the 898B will operate in these ranges: 100Vac to 120Vac, 50Hz to 60Hz. The FUSE installed should be: 5x20mm SLO-BLO Type rated at 1.0Amp



With the LINE VOLTAGE SELECT set to 230V as shown above, the 898B will operate in these ranges: 200Vac to 240Vac, 50Hz to 60Hz. The FUSE installed should be: 5x20mm SLO-BLO Type rated at 0.5Amp

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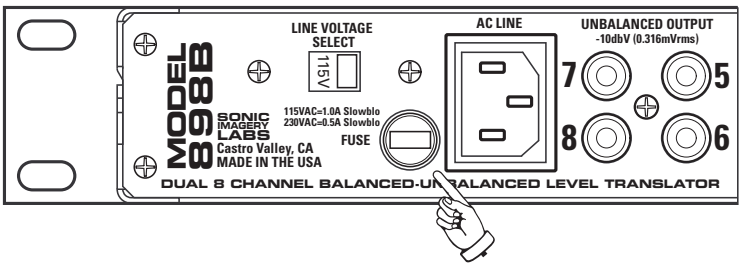
Fuse Replacement:

If the fuse should fail or needs to be exchanged to match your area or country, proceed as follows:

ALWAYS DISCONNECT THE POWER LINE BEORE MAKING THESE CHANGES.

1. Locate the FUSE holder on the rear panel. It is at the far left as one faces the rear of the unit. See diagram.



2. Using a flatbladed screwdriver, rotate the fuseholder one quarter turn counterclockwise until the center fuse retainer disengages. It is spring loaded and will pop out. Replace fuse with required type and re-install by rotating the fuse retainer one quarter turn clockwise. The screwdriver slot will be horizontal as shown in the diagram when retainer is locked.

For areas that use 100Vac to 120Vac, 50Hz to 60Hz. The FUSE installed should be: **5x20mm SLO-BLO Type rated at 1.0Amp**

For areas that use 200Vac to 240Vac, 50Hz to 60Hz. The FUSE installed should be: **5x20mm SLO-BLO Type rated at 0.5Amp**

Installation Site

The 898B may be used in most areas, but to maintain top performance and prolong operating life, observe the following environmental limitations:

1.) Nominal temperature should be 5 to 35 degrees Centigrade (41 to 95 degrees Fahrenheit)
2.) Relative humidity should be 30 to 65% (non-condensing).
3.) Strong magnetic fields should not exist nearby. Conversely, this unit should not be installed near other equipment that is sensitive to magnetic fields.

Rack Mounting

The Model 898B can be mounted in a standard 19" EIA rack either vertically or horizontally. Use the supplied 10-32x 3/4 Rack Mounting Screw Kit included.

Serial Number:

The Sonic Imagery Labs Model 898B has a serial number located on the top cover near the rear panel. Please recird the model number and serial number and retain them for your records.

Model Number: _____

Serial Number: _____

Date of Purchase: _____

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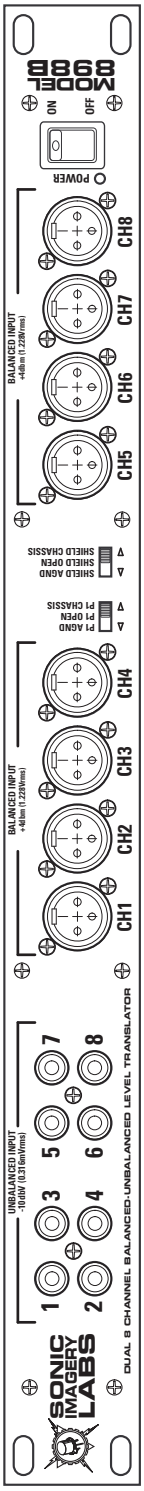

Power switch

Power LED

XLR-3 Balanced Line Inputs. Channels 5 thru 8. +4dbu to -10dBV, balanced to unbalanced translation direction. The input can be driven from balanced cables as long as 500 feet (152 meters).

Shield termination option switch (Front panel XLRs only)

XLR Pin1 termination option switch (Front panel XLRs only)

XLR-3 Balanced Line Inputs. Channels 1 thru 4. +4dbu to -10dBV, balanced to unbalanced translation direction. The input can be driven from balanced cables as long as 500 feet (152 meters).

RCA Phono Type Unbalanced Line Inputs. Channels 1 thru 8. -10dBV to +4dBu, unbalanced to balanced translation direction. It is important to keep this cable length as practically short to minimize unwanted pickup of noise and hum.

FRONT PANEL CONNECTIONS AND CONTROLS

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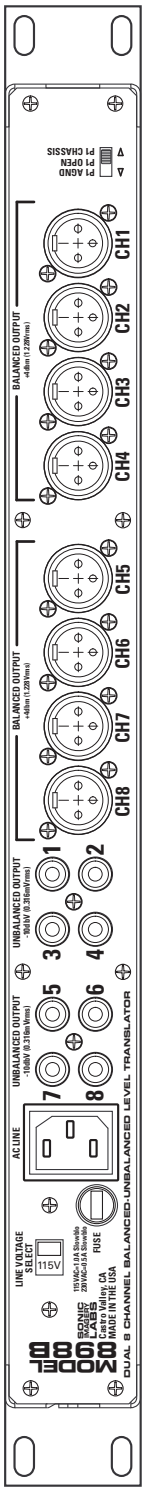

XLR Pin1 termination option switch (Rear panel XLRs only)

XLR-3 Balanced Line Outputs. Channels 1 thru 4. -10dBV to +4dBu, unbalanced to balanced translation direction. These outputs can drive balanced cables as long as 500 feet (152 meters). Belden type 8451 or 9452 or similar shielded cable is recommended.

XLR-3 Balanced Line Outputs. Channels 5 thru 8. -10dBV to +4dBu, unbalanced to balanced translation direction. These outputs can drive balanced cables as long as 500 feet (152 meters). Belden type 8451 or 9452 or similar shielded cable is recommended.

RCA Phono Type Unbalanced Line Outputs. Channels 1 thru 8. +4dbu to -10dBV, balanced to unbalanced translation direction.. It is important to keep this cable length as practically short to minimize unwanted pickup of noise and hum.

IEC 320 AC Mains Receptacle

5x20mm AC Mains FUSE Holder

AC Mains Voltage Select Switch

REAR PANEL CONNECTIONS AND CONTROLS

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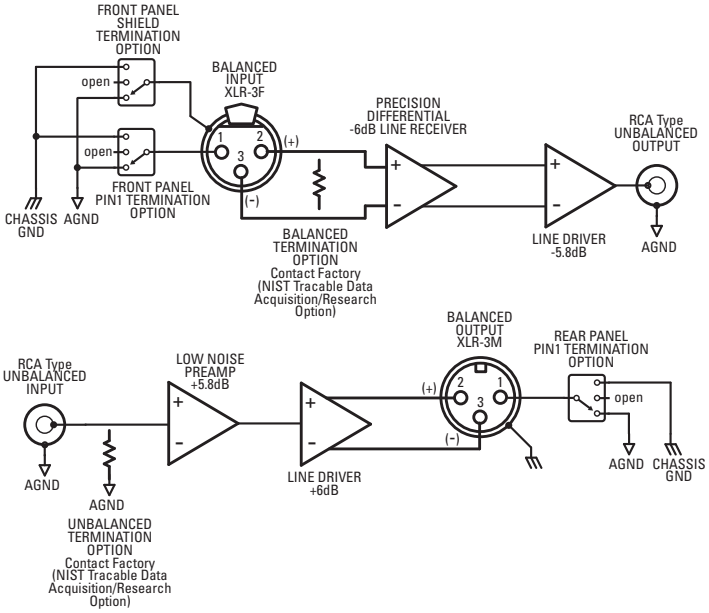
Block Diagram

The following diagram is a simplified block diagram of the 898B. It should be noted that the analog audio path is DC coupled from input to output. No interstage capacitors are used in the design. This feature allows the 898B to act like a "straight wire." Hence the units bandwidth extends to and is flat to DC. This is important for data acqusition, seismological and scientific research.



DC Offset Error

If the equipment connected to the 898B inputs exhibits a large amount of DC offset, due to a leaking or failed output coupling capacitor, this DC error will be passed thorough to the next piece of equipment in the analog chain. If the offset error is quite large, the precision translator amplifiers in the 898B will asymmetrically clip the program material content. When this occurs, the result will be excessive distortion, and the offending equipment driving the 898B should be repaired or replaced.

Output Drive Current

The balanced outputs of the 898B has the ability to drive 32 volts peak to peak (24dBu) into a 600Ω load across 500 feet of cable without loss of audio quality. The 898B does not use transformers and it's active circuitry is specifically designed to be uncolored and reproduce at it's outputs, what is input, to a high degree of accuracy.

The unbalanced drive has the same capability but remember for noise immunity cable runs should be kept as short as practical.

Also, unlike transformer based line level translator products, the Sonic Imagery Labs Model 898B can provide up to 60mA of drive current in the balanced drive and 50mA of drive current in the unbalanced directions.

Balanced Input Characteristics

The balanced XLR input signals are conditioned by precision high performance differential line receivers, that feature ultra low distortion (0.0006% at 1kHz) and noise performance (-107dBu) as well as better than 90dB (at 60Hz) common mode noise rejection (CMNR). The source impedances connected to the balanced input must be nearly equal to assure good common mode noise rejection. A 5Ω mismatch in source impedance will degrade the CMNR to approximately 77 dB (RTO). If the source has a known mismatch, an additional resistor in series with the opposite input can be added to preserve good CMNR.

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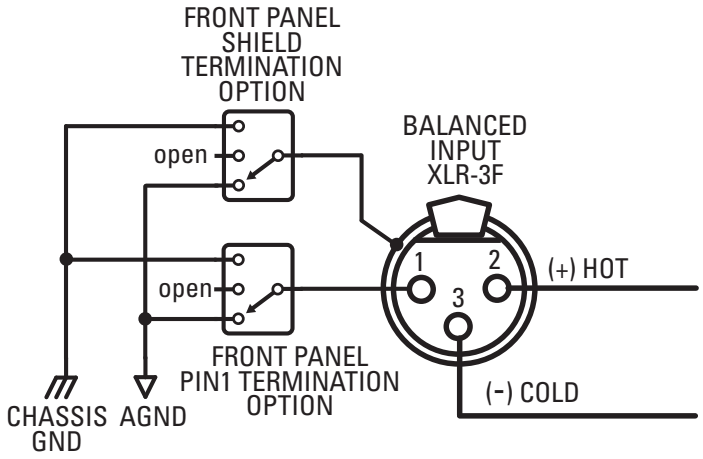
Balanced XLR3 Connections

XLR3 connectors are by far the most common style, and are an industry standard for balanced audio signals. The great majority of professional microphones, mixers and broadcast equpment use the XLR connector. EIA Standard RS-297-A describes the use of the XLR3 for balanced audio signal level applications.

Prior to the introduction of this standard, the wiring of pins 2 and 3 varied. The pin 2 "hot" and pin 3 "cold" convention was typically used by European and Japanese equipment manufacturers, but American companies used pin 3 "hot" and pin 2 "cold". This caused problems when interconnecting equipment with unbalanced connections. The pin 3 "hot" convention is now obsolete but is still found on vintage equipment worldwide. Pin 1 has always been ground and/or shield if the cable is shielded, and many connectors connect it internally to the connector shell or case.

Although covered in industry technical standards, there is still some disagreement on the best way to handle the use of pin 1 for grounding (earthing). The main controversy is whether the shell of the connector should be connected to pin 1 or the shield, or left floating. AES standards mentioned above recommend that shells of cable-mounted connectors should never be connected to pin 1 or the shield, because inadvertent contact of the shell with another grounded surface while in use can create unwanted current paths for fault current, potentially causing hum and other noise. On the other hand, equipment containing active circuitry should always have pin 1 connected to the conductive enclosure of the equipment as close as possible to the point where the signal enters the enclosure. The argument centers around the radio frequency shielding provided by the shell of the connector, which may be reduced if it is left floating. An alternative solution is to connect the shell to pin 1 and the shield through a small value capacitor, providing RF shielding but allowing very little audio-frequency current to flow.

The 898B is wired per EIA Standard RS-297-A. The diagram below illustrates cable connections. It is also important to know how your cables are constructed as many hum and ground loops problems arise from poor or incorrectly constructed cables.



PIN1 = Chassis ground, typically cable shield
PIN2 = Positive polarity terminal (aka "hot")
PIN3 = Negative polarity terminal (aka "cold")

Balanced Input Pin1 Termination

The balanced input Pin1 termination switch located on the 8988B front panel allows the user to connect Pin1 of the eight input XLR3 connectors to chassis ground, open / floating, or to the 898Bs internal analog signal ground. Under most circumstances it is to be set to the P1 CHASSIS ground position. Setting this switch to the P1 OPEN position disconnects pin1 from the chassis ground. This is sometimes refered to as a "ground lift."

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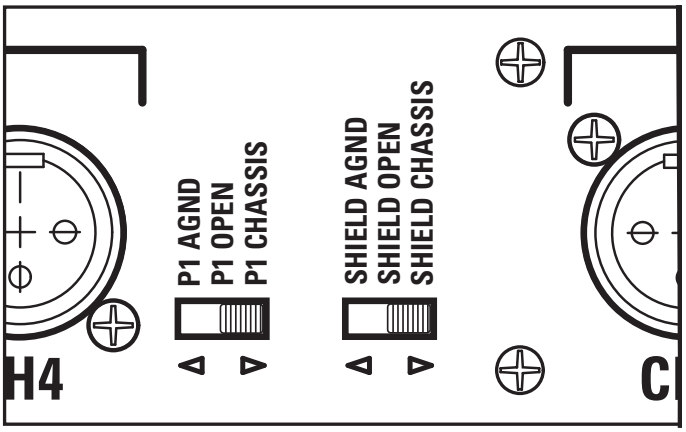
Model 898B - Octal Balanced Unbalanced Level Translator

Balanced Input Pin1 Termination (contnued)

In special data acquisition, seismological and scientific research applications, the transducers ground reference may need to be tied to the 898B's internal active circuit signal ground. Setting this switch to the P1 AGND position connects pin1 to the the 898B's internal ground reference.



Balanced Input Shield Termination

Some cable manufacturers tie the shield to the shell or case, others do not. It is also important to know how your cables are constructed as many hum and ground loops problems arise from poor or incorrectly constructed cables. The 898B allows the user to tie the shell to chassis ground, leave it open or unconnected or in the "ground referenced" case for data acquisition, seismological and scientific research applications. Typically this switch is either left in the open or chassis ground position.

Balanced Input Impedance

As normally shipped for broadcast audio, recording studios and playback-transport audio systems, the XLR3 balanced input impedance (Zin-diff) is 24KΩ differential and 18KΩ common mode (Zin-cm).

OPTION-001

For special data acquisition, seismological and scientific research applications, Sonic Imagery Labs also can install a NIST traceable balanced line termination calibrated to the applications specifc impedance. An OPTION-001 decal is placed on the front panel indicating specific input impedance. Contact Sonic Imagery Labs for more information.

Phantom Power

Do not apply phantom power to any of the 898B inputs. Doing so will most likely result in catastrophic damage which is not covered by warranty.

Balanced Output Characteristics

The balanced outputs of the 898B has the ability to drive 32 volts peak to peak (24dBu) into a 600Ω load across 500 feet (152meter) of cable without audible loss of audio quality. Belden type 8451 or 9452 or similar shielded cable and quality XLR connectors are recommended. The balanced +4dBm XLR3 output is driven by a high performance monolithic differential line drivers offering improved performance over conventional cross-coupled balanced line driver designs.

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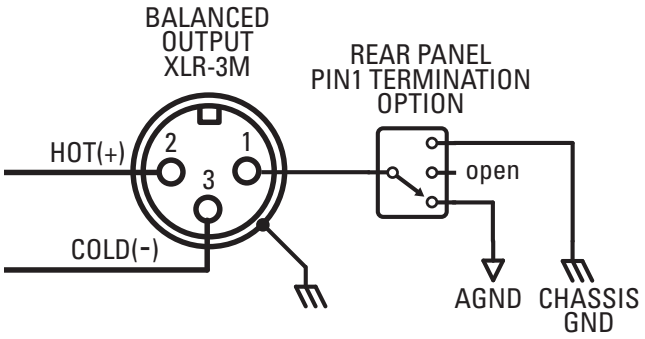
Balanced Output Characteristics (continued)

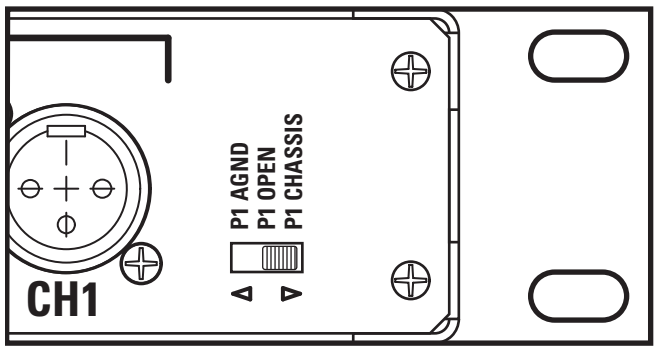
Based on a high-performance, fully differential dual feedback-loop op amp which exhibits low noise and distortion, high slew rate, and wide output swing. The 898B's drivers are stable when driving difficult reactive loads, and have short-circuit protected outputs. The drivers can produce 60mA of drive current allowing loads as low as 300 ohms to be driven.



PIN1 = Chassis ground, typically cable shield
PIN2 = Positive polarity terminal (aka "hot")
PIN3 = Negative polarity terminal (aka "cold")

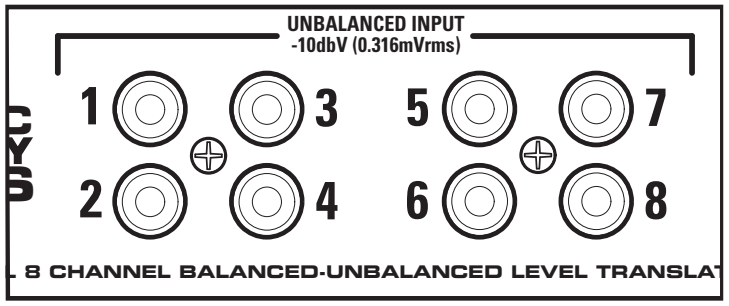
Balanced Output Pin1 Termination

The balanced output Pin1 termination switch located on the 8988B rear panel allows the user to connect Pin1 of the eight output XLR3 connectors to chassis ground, open / floating, or to the 898Bs internal line driver ground. Under most circumstances it is to be set to the P1 CHASSIS ground position. Setting this switch to the P1 OPEN position disconnects pin1 from the chassis ground. This is sometimes refered to as a "ground lift." In special data acquisition, seismological and scientific research applications, the 898B's drivers ground reference may need to be tied to the receiving equipment. Setting this switch to the P1 AGND position connects pin1 to the the 898B's internal line driver ground reference.



Unbalanced -10dBV Input Characteristics

The unbalanced -10dBV input preamp circuitry also features excellent analog audio characteristics. THD+Noise is below 0.0005% throughout most of the audio band. The unbalanced input impedance is fixed at 10KΩ to match the drive characteristics of consumer and "pro-sumer" equipment. It is important to keep this this unbalanced input cable length as practically short as possible to minimize unwanted pickup of noise and hum.



It is important to note that the analog audio path from the unbalanced to balanced drive is also DC coupled from input to output.

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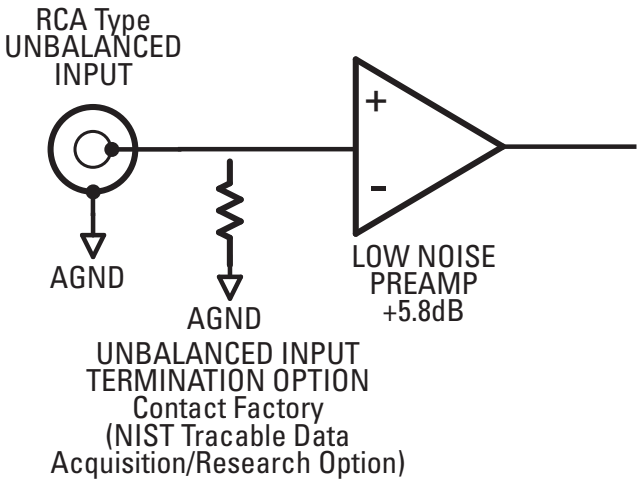
Unbalanced -10dBV Input Characteristics (continued)

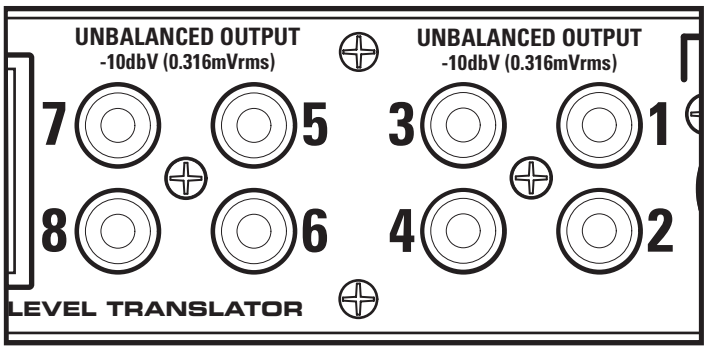
No interstage capacitors are used in the design. This feature allows the 898B to act like a "straight wire." Hence the units bandwidth extends to DC and is flat to 200kHz. Gold plated high performance RCA phono style input jacks are used throughout. Shield is isolated from chassis ground.

OPTION-002
For special data acquisition, seismological and scientific research applications, Sonic Imagery Labs can also custom taylor the unbalanced lines input termination impedance (Zin) to any value between 4.75KΩ to 500KΩ. An OPTION-002 decal is placed on the front panel indicating specific input impedance. Contact Sonic Imagery Labs for more information.

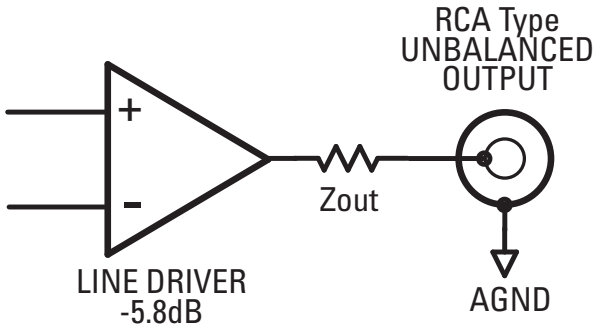


Unbalanced -10dBV Output Characteristics

The unbalanced -10dBV output driver circuitry also features excellent analog audio characteristics. THD+Noise is below 0.0007% throughout most of the audio band. Gold plated high performance RCA phono style input jacks are used throughout. Shield is isolated from chassis ground. The drivers can produce 50mA of drive current allowing loads as low as 600 ohms to be driven.



The unbalanced output impedance is fixed at 100Ω and should easily drive inputs of consumer, "pro-sumer" audio equipment as well as digitizers, data acquisition, seismological and scientific research equipment . It is important to keep this unbalanced output cable length as practically short as possible to minimize unwanted pickup of noise and hum.



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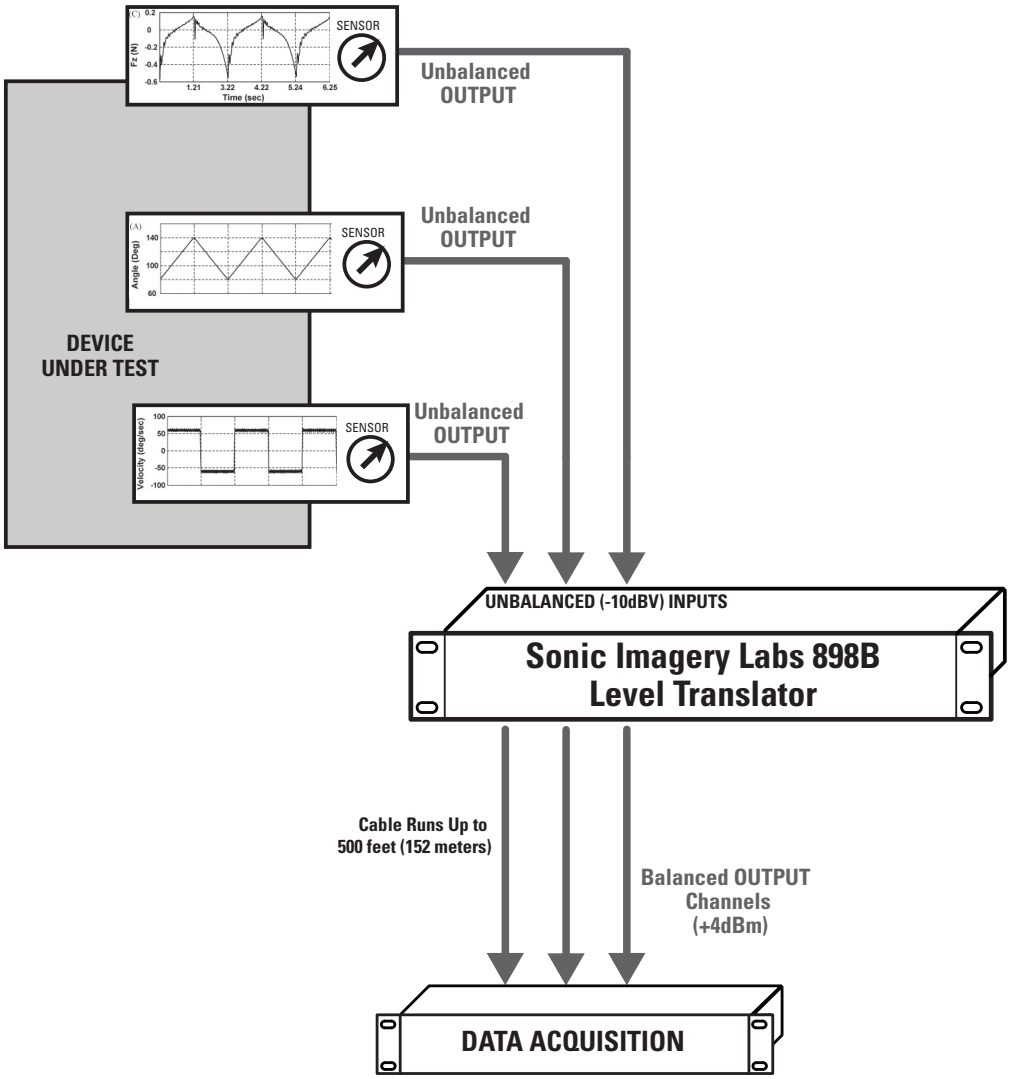
Model 898B - Octal Balanced Unbalanced Level Translator

APPLICATIONS

The illustration below shows a simple connection diagram for a data acquisition application. The sensors are typically connected to the device under test and the unbalanced outputs connected to the Sonic Imagery Labs Model 898B located a few feet away. The 898B driving long balanced lines allows the data acquisition equipment to be located at a remote site, mobile shelter, or laboratory located away from the device under test. This is beneficial if the DUT is located in a hostile enviroment.



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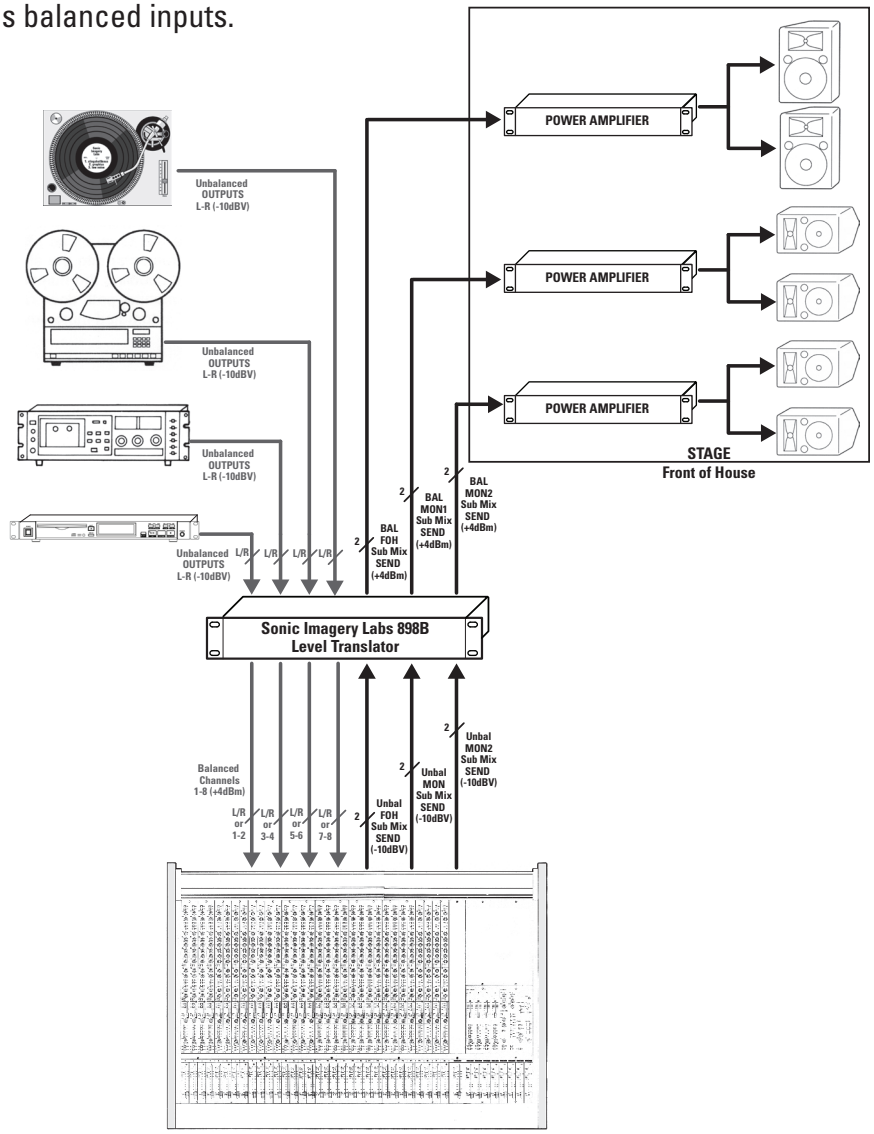
APPLICATIONS

The illustration below shows a simple block diagram for a live stage performance, DJ, house of worship, as well as a broadcast audio application. Support gear is typically located at the mixer or control booth and the unbalanced outputs are connected to the Sonic Imagery Labs Model 898B located a few feet away. The 898B driving long balanced lines allows the power amplifiers, monitors and FOH equipment to be located at the stage. This simple example illustrates the ability of unbalanced mixer sends to be sent to a remote location and interfacing unbalanced prosumer support gear to directly interface with pro-level mixing boards balanced inputs.



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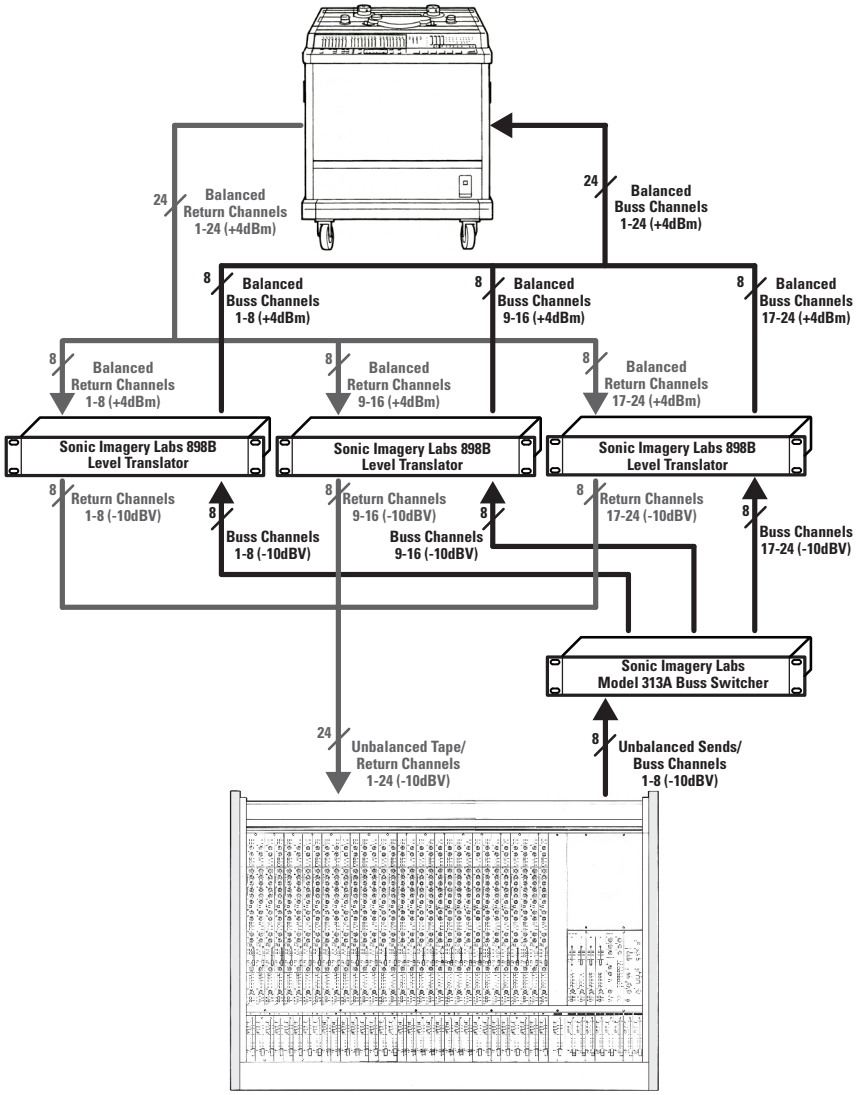
APPLICATIONS

The illustration below shows a connection diagram for a recording studio application where the mixing board only supports 8 buss -10dBV channel sends, but the multitrack has 24 balanced inputs and outputs at +4dBm nominal levels. This diagram also shows the Sonic Imagery Labs Model 313A Buss Switcher used as a buss router, eliminating the need for patching and patch cables. 24 channels of return is always available for monitoring and playback. This application also allows for the multitrack recorder to be located remotely, keeping the multitracks fan and mechanical noise isolated from the control room.



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Model 898B - Octal Balanced Unbalanced Level Translator

SPECIFICATIONS:

All specifications are subject to change without notice. The information provided herein is believed to be reliable; however; Sonic Imagery Labs assumes no responsibility for inaccuracies or omissions.

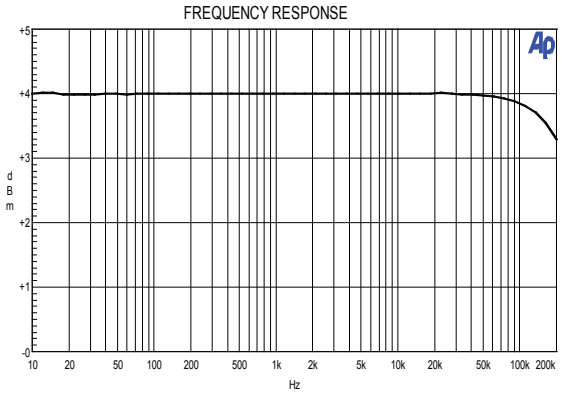
Physical

- Unit Size
  1.75" Height x 19" Wide x 4.8" Deep
  (44.45mm Height x 483mm Wide x 122mm Deep)
- Unit Weight
  4 pounds 9 ounces
  (2.07 kilograms)

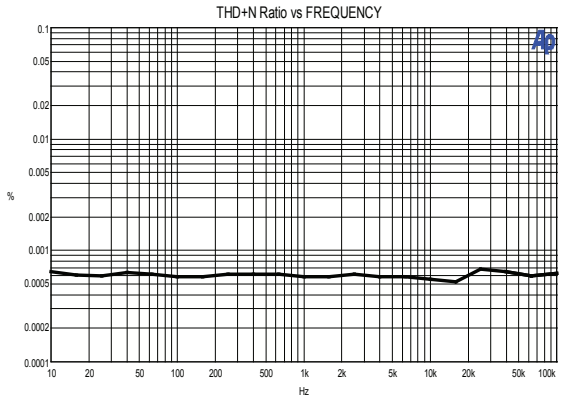
Electrical

-10 dBV to +4 dBu (RCA Type to XLR3) Unbalanced to Balanced Direction

- Nominal input reference level
  -10 dbV(0.316Vrms)
- Nom. input ref. level channel to channel accuracy
  +/-1% (0.08dB)
- Bandwidth
  DC-165Khz +/- 0.2dB
  200KHz -3dB
- THD+Noise@1Khz, Rload 600Ω, 22Hz-20KHz BW
  Vo=10Vrms 0.0006%
- Noise Floor, 22Hz-20KHz BW
  better than -101dBu
- Headroom, THD+Noise <1%, Rload 600Ω,
  22Hz-20KHz BW +22.3dBu (28.5Vpp, 10.1Vrms)
- Output DC Offset, 600Ω Rload
  +/- 4mV typical
- Input Impedance Zin 10KΩ
  OPTION 002 user application defined
- Output Impedance Zout 50Ω



-10 dBV to +4 dBu (RCA Type to XLR3) Unbalanced to Balanced Frequency Response



-10 dBV to +4 dBu (RCA Type to XLR3) Unbalanced to Balanced THD+N vs Frequency

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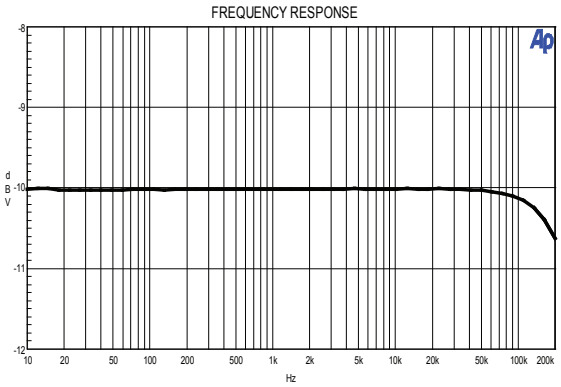
Model 898B - Octal Balanced Unbalanced Level Translator

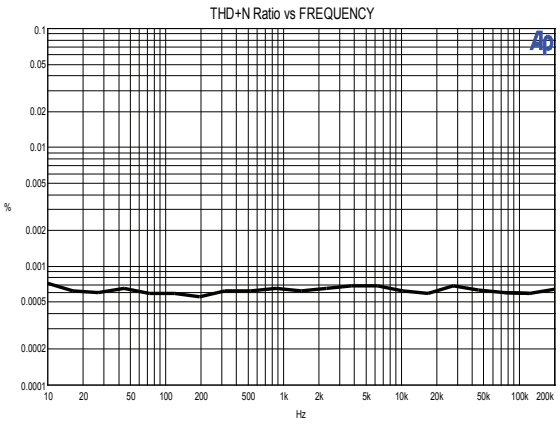
SPECIFICATIONS: (continued)

+4 dBu to -10 dBV (XLR3 to RCA Type)
Balanced to Unbalanced Direction

- Nominal input reference level
  +4 dBu (1.228Vrms)
- Nom. input ref. level channel to channel accuracy
  +/-1% (0.08dB)
- Bandwidth
  DC-165Khz +/- 0.2dB
  200KHz -3dB
- Common Mode Rejection, Vcm+/-
  46.5V, Rs 50Ω better than 90dB at 60Hz
- THD+Noise@1Khz, Rload 600Ω
  Vo=2Vrms 0.0006%
- Noise Floor, 22Hz-20KHz BW
  -107dBu
- Headroom, THD+Noise <1%, RTO
  +22.3dBu (28.5Vpp, 10.1Vrms)
- Output DC Offset, 10KΩ Rload
  +/-1mV typical
- Input Impedance
  24KΩ differential
  18KΩ common mode
  OPTION 001 user application defined
- Output Impedance 100Ω



+4 dBu to-10 dBV (XLR3 to RCA Type) Balanced to Unbalanced Frequency Response



+4 dBu to -10 dBV (XLR3 to RCA Type) Balanced to Unbalanced THD+N vs Frequency

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Service Information

Sonic Imagery Labs will service or repair any of its products, no matter when it was manufactured or what condition it is in. However, no goods will be accepted without a Return Authorization number. If we don't know its coming we wont be prepared to make necessary repairs, and most likely we wont accept it upon delivery.

BEFORE SENDING ANYTHING TO SONIC IMAGERY LABS, EMAIL OR CALL FOR A RETURN AUTHORIZATION NUMBER. JUST ASK, WE'LL GLADLY GIVE YOU ONE!

In-Warranty Repairs

The Sonic Imagery Labs 898B is covered by a limited warranty for a period of three (3) years from the manufacturing date located on the serial number tag. The serial tag is located on the rear panel of the unit. The limited warranty statement found at the front of the users manual spells out all the legal details, and the generalities that follow are not intended to modify that statement.

TO HAVE YOUR UNIT REPAIRED:

1. Email or call 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.
4. Ship it to Sonic Imagery Labs freight prepaid.

Just do those 4 things, and repairs made in warranty will cost you only the one way freight fee. We will prepay the return freight.

However, if you ship your product to us in some kind of flimsy, unsafe or generally lousy non-Sonic Imagery Labs packaging, we will add to the cost of repair for proper return shipping materials. Finally, if the problem turns out to be operator inflicted, you'll have to pay for both parts and labor to return the unit to factory specifications. In the event there is a charge, we will still pay for return freight, but the unit under repair will not be returned until all other charges are paid.

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