

BEFORE PROCEEDING WITH COMPLETE UNPACKING AND SETUP,  
CONSULT UNPACKING AND INSPECTION INSTRUCTIONS ON PAGE 8.

**MODEL LA-5**  
**AUDIO LEVELER**



UNITED RECORDING ELECTRONICS INDUSTRIES  
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Printed in U.S.A.

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SECTION I  
INTRODUCTION

1.1 FRONT PANEL

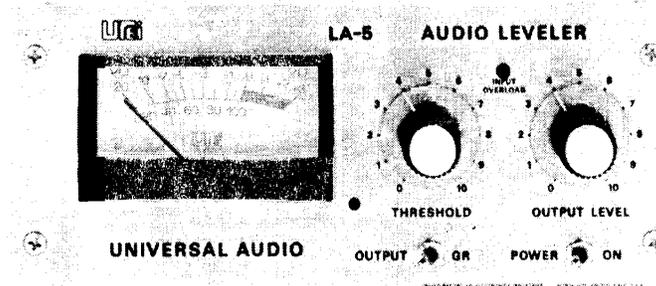


FIGURE 1. LA-5 FRONT PANEL

- A. **METER.** The LA-5's meter is factory set for 0 VU = +4 dBm (1.23 volts), or +8 dBm (1.96 volts) output level. In GR mode, the meter should read 0 dB so long as no gain reduction occurs. If the meter rests at some other value, it may be calibrated by inserting a small, slotted screwdriver through the hole just to the right of the meter.
- B. **POWER.** This switch turns the LA-5's AC power ON and OFF. No signal flows when power is OFF. A 5-second turn-on time delay circuit prevents clicks, pops or thuds at the LA-5's output.
- C. **METER FUNCTION.** A toggle switch selects the meter function. In GR mode, the meter rests at 0 VU until gain reduction occurs; then it deflects down scale corresponding to the number of dB of compression. In OUTPUT mode, the meter indicates output level, where 0 VU equals +4 dBm.
- D. **OUTPUT LEVEL.** This control adjusts the gain of the LA-5's output stage, and is independent of the THRESHOLD setting.
- E. **THRESHOLD.** This control adjusts the level above which compression or limiting occurs. It is continuously variable from -30 dBm (24 mV) to +20 dBm (7.75 V) at the input terminal.

F. INPUT OVERLOAD INDICATOR. This LED (Light Emitting Diode) illuminates when the input level reaches +20 dBm (7.75 volts), high enough to cause distortion in the input amplifier. Avoid distortion by setting the output level of the source or by using an attenuation pad so the LED does not turn on. If a nominal +4 dBm source causes the LED to be constantly ON, be sure the rear-panel INPUT RANGE switch is in the HIGH position.

## 1.2 REAR PANEL

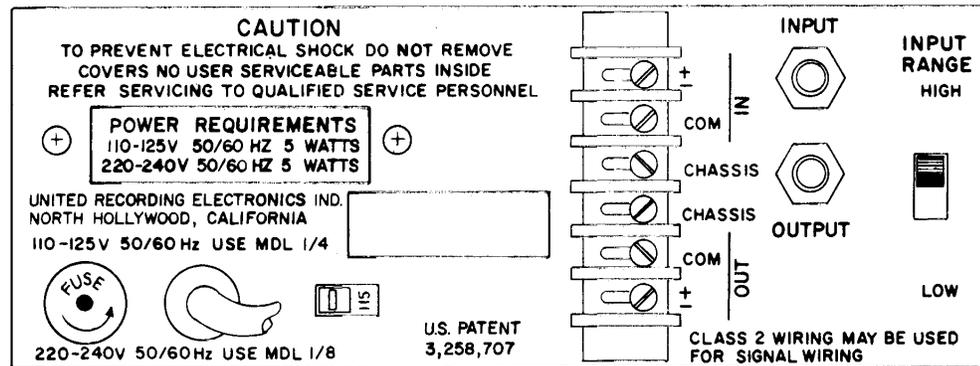


FIGURE 2. LA-5 REAR PANEL

- A. FUSE. For 110-125 V operation, use MDL 1/4-amp (slo-blo) fuse. For 220-250 V operation, use MDL 1/8-amp (slo-blo) fuse.
- B. POWER CORD. For safety, the 3-wire cord ties the mains ground (third prong on the plug) to the chassis ground. In some instances it may be desirable to temporarily break the mains ground, using a 3-prong to 2-prong AC adapter, so that hum-causing ground loops can be detected.
- C. MAINS VOLTAGE SELECTOR. This recessed switch can be set with a screwdriver for nominal 115 V or 230 V operation; be sure it is in the correct mode before connecting the LA-5 to the mains. If the unit is switched from one operating voltage to another, be certain to exchange the fuse for another of the correct rating.

D. INPUT TERMINALS. For balanced or floating sources, connect the high side of the line to the "+" terminal, the low side of the line to the "COM" terminal, and the shield to the "CHASSIS" terminal. For unbalanced sources, connect the high side of line to the "+" terminal, and the low side to the "COM" and "CHASSIS" terminals.

E. OUTPUT TERMINALS. Connect the high side of a balanced or unbalanced line to the "+" terminal. Connect the low side of a balanced line or the shield of an unbalanced line to the "COM" terminal. If hum develops with an unbalanced line, connect a jumper between the "COM" and "CHASSIS" terminals. If a high impedance device is connected to the LA-5 output, connect a 620 ohm, 1/2 watt load resistor across the "+" and "COM" terminals.

F. TRS INPUT & OUTPUT JACKS. These phone jacks parallel the terminal strip. The tip connects to the "+" terminal, the ring to the "COM" terminal, and the sleeve to the "CHASSIS" terminal. Standard 2-wire phone plugs (guitar type plugs) may be inserted for unbalanced circuits, or 3-wire phone plugs (stereo phone plugs) may be used for balanced circuits.

G. INPUT RANGE SWITCH. This switch sets the LA-5's input sensitivity. "HIGH" position corresponds to a nominal input sensitivity of 0 dBm, for most professional lines. "LOW" position corresponds to a nominal input sensitivity of -20 dBm, for preamplified instruments, very "hot" condenser microphones, or semi-professional or hi-fi type equipment.

### 1.3 DESCRIPTION

The UREI LA-5 Audio Leveler is a single-channel unit. Making use of UREI's patented Electro-Optical Attenuator technology, the LA-5 offers smooth, predictable performance coupled with ease of operation. The gain reduction is accomplished with an RMS detector, which is the analog of human hearing, so gain reduction is smooth and natural sounding. The compression ratio is a fixed 20:1. The detector consists of a light dependent resistor (LDR) and an electroluminescent light source which is a semiconductor, so it does not change or deteriorate with age.

Threshold is adjustable over a wide range, giving the flexibility to limit only the highest amplitudes, or to compress virtually the entire program.

A balanced, differential input stage and a transformer-isolated output assure trouble-free patching by avoiding ground loop problems. The input sensitivity is switchable to accommodate high level lines (nominal 0 dBm sensitivity) or lower level sources (nominal -20 dBm sensitivity). Input level is monitored by a bright LED indicator that illuminates whenever the incoming signal level is high enough to cause distortion in the first amplifier stage.

Output level is continuously variable. The large, illuminated VU meter can be switched from the front panel to indicate dB of gain reduction, or output level (0 VU = +4 dBm). In gain reduction mode, the meter is driven by a completely isolated circuit, so distortion is minimized. All connections are made to a standard barrier strip.

The LA-5 is ideal for all types of sound reinforcement. Due to its RMS-responding gain reduction circuitry, the sound is not adversely altered even with extreme compression. Inputs and outputs are available on the rear panel at a barrier strip and at a pair of parallel-wired jacks. The jacks can accept professional type TRS plugs or "guitar cord" type plugs.

#### 1.4 DESIGNATION OF INPUT AND OUTPUT LEVELS

The term "dBm" has been commonly misapplied when describing voltage levels in high impedance lines. In fact, "dBm" refers to a power level, where 0 dBm is equal to 1 milliwatt, or 0.775 V across a 600 ohm termination. However, in high impedance circuits, power dissipation is negligible, and only the voltage level is of interest. The term "dBV" would be more useful here, where 0 dBV is equal to 1 volt (across any impedance).

Unfortunately, because 0 dBV (1 volt) across a 600 ohm line is equal to +2.2 dBm, the term "dBV" can be misleading. For this reason, the term "dBm" is used exclusively in this manual, with the understanding that, in other than 600 ohm circuits, the voltage level is the reference, not the power level.

For example, if an input sensitivity is rated at +4 dBm, and the input impedance is 40 kohms, the true sensitivity is 1.23 volts (1.23 volts across 600 ohms is +4 dBm). In strictly correct technical terms, the input would have a sensitivity of -14 dBm, which is the power dissipated by 1.23 volts across 40 kohms. However, a mixer of +4 dBm nominal output provides the correct voltage to drive the input, so the input sensitivity is rated at +4 dBm. In fact, if a 604 ohm terminating resistor is used, the input sensitivity becomes a true +4 dBm. The same criteria apply to output level ratings.

## 1.5 SPECIFICATIONS

### ELECTRICAL

ACTUAL INPUT IMPEDANCE:	40 kohms, used as a balanced, differential input. 20 kohms, used as an unbalanced, single-ended input.
NOMINAL INPUT SENSITIVITY:	0 dBm or -20 dBm, switchable.
GAIN:	40 dB, maximum.
EQUIVALENT INPUT NOISE:	-90 dBm (15.7 kHz bandwidth, 600 ohm input termination).
ACTUAL OUTPUT IMPEDANCE:	<50 ohms; may be used with loads of 150 ohms or higher impedance. (620 ohm termination resistor is recommended for high-Z loads).
MAXIMUM OUTPUT LEVEL:	+24 dBm into a 600 ohm load; +20 dBm into a 150 ohm load.
FREQUENCY RESPONSE:	20 Hz - 20 kHz, <u>±</u> 0.5 dB.
TOTAL HARMONIC DISTORTION:	Less than 0.25%, 30 Hz - 15 kHz.
ATTACK TIME:	Varies from 1 to 10 milliseconds for 63% correction, depending on the signal waveform.
RELEASE TIME:	Varies from 100 milliseconds to 1 second for 63% return, depending on duration of compression.
COMPRESSION RATIO:	Fixed at 20:1.
THRESHOLD OF COMPRESSION:	From -30 dBm to +20 dBm; front panel adjustable.
ILLUMINATED METER:	Switchable to display Output Level, 0 VU = +4 dBm, or Gain Reduction, 0 VU = 0 dB.
INPUT OVERLOAD INDICATOR:	LED illuminates when input level reaches or exceeds +20 dBm (input range switch in HIGH mode) or 0 dBm (input range switch in LOW mode).

EXTERNAL CONNECTIONS: Barrier strip and paralleled TRS jacks on rear panel.

MAINS REQUIREMENTS: 110 V to 125 VAC or 220 V to 250 VAC (switch selectable), 50 or 60 Hz. Power consumption is 10 W maximum.

ENVIRONMENT: Operates from +10 to +50 °C. (45 to 121 °F.)

## PHYSICAL

FINISH: Panel is 1/8" brushed, clear-anodized aluminum. Chassis is cadmium plated steel.

DIMENSIONS: 3-1/2" high x 8-1/2" wide x 8" deep. (89 mm x 216 mm x 203 mm).

NET WEIGHT: 6.5 pounds (2.95 kg).

SHIPPING WEIGHT: 8 pounds (3.63 kg).

ACCESSORIES: Single Rack Mount Kit, No. SR-21.  
Double Rack Mount Kit, No. DR-21.

WARRANTY: Limited, one year parts and labor.

SECTION II  
INSTALLATION

2.1 UNPACKING AND INSPECTION

Carefully examine the contents of the shipping carton for any signs of physical damage which could have occurred in transit. Though your LA-5 was carefully packed at the factory, and the container was designed to protect the unit from rough handling, accidents do happen.

IF DAMAGE IS EVIDENT, DO NOT DESTROY ANY OF THE PACKING MATERIAL OR THE CARTON. IMMEDIATELY NOTIFY THE CARRIER OF A POSSIBLE CLAIM FOR DAMAGE. SHIPPING DAMAGE CLAIMS MUST BE MADE BY YOU, THE CONSIGNEE.

The shipment should include a two-part warranty card bearing the same serial number as the LA-5, an instruction manual, and the LA-5. IN ORDER TO ACTIVATE THE ONE-YEAR LIMITED WARRANTY, THE CARD MUST BE COMPLETED AND THE RETURN PORTION MAILED IMMEDIATELY.

2.2 ENVIRONMENTAL CONSIDERATIONS

The LA-5 will operate satisfactorily over a wide range of ambient temperatures, from 10 to 50 °C (45 to 121 °F). If the unit is installed in an equipment rack that also contains heat-producing equipment (such as power amplifiers), adequate ventilation should be provided. This will prolong component life and maximize operational stability. Also, while circuitry susceptible to hum pickup is fully shielded, installation should nevertheless be planned to avoid locating the LA-5 immediately adjacent to large power transformers, motors, etc.

2.3 RACK MOUNTING A SINGLE UNIT

The SR-21 kit (optional) allows mounting of one LA-5 in a standard 19" USASI rack. The unit occupies two standard spaces (3-1/2" high). The SR-21 kit should contain the following items:

QUANTITY	DESCRIPTION	UREI PART NUMBER
2	Rack Adapter Angles	25-12108
2	Rack Extensions	25-12109
4	#6-32 Oval Head Screws	
4	#6 Lock Washers	
4	#6-32 Nuts	
4	#8-32 Pan Head Screws	
4	#8 Lock Washers	

The SR-21 Installation Procedure is as follows:  
(Refer to Figure 3)

1. Using the #6-32 screws, lockwashers, and nuts, mount the angles to the back side of the rack extensions. Do not tighten the screws at this time.
2. Using the #8-32 screws and lock washers, mount the angle and rack extension assemblies to the tapped holes in the sides of the LA-5. Do not tighten the screws at this time.
3. The LA-5 front panel is adjustable to allow optimum alignment of the front panel with the rack extensions. For precise alignment, loosen the front panel mounting screws, as well as the top and bottom cover screws (1/2 turn is adequate). Adjust the relative positions of the brackets and panels, and then tighten all hardware. SEE SECTION 2.5 BEFORE INSTALLING THE ASSEMBLY IN A RACK.

#### 2.4 RACK MOUNTING TWO UNITS

The DR-21 kit (optional) allows mounting of two LA-5's side by side in a standard 19" USASI rack. The assembly occupies two standard spaces (3-1/2" high). The DR-21 kit should contain the following items:

QUANTITY	DESCRIPTION	UREI PART NUMBER
2	Joining Plates	25-11168
2	Rack Mounting Angles	25-12106
2	Spacer Plates	25-12107
4	#8-32 Pan Head Screws	
4	#8 Lock Washers	

The DR-21 Installation Procedure is as follows:  
(Refer to Figure 4)

1. Place the two LA-5's side by side, with front panels touching. Remove four screws from the top of each unit, as illustrated, to permit positioning of the joining plate. Replace the screws through the plate and covers, but do not tighten completely at this time.
2. Turn the assembly upside down, and install the bottom joining plate in the same fashion as the top joining plate (step 1).

3. Using the #8-32 screws and lock washers, mount one angle and one spacer plate to each side of the LA-5 assembly. The spacer plates should be located between the angles and the LA-5 chassis. The mounting holes in the LA-5 are tapped, so nuts are not required. Do not tighten the screws at this time.

4. The LA-5 front panels are adjustable to allow optimum alignment of the front panels with the rack mounting angles. For precise alignment, loosen the front panel mounting screws, as well as the top and bottom cover screws (1/2 turn is adequate). Adjust the relative positions of the angles and panels, and then tighten all hardware. SEE SECTION 2.5 BEFORE INSTALLING THE ASSEMBLY IN A RACK.

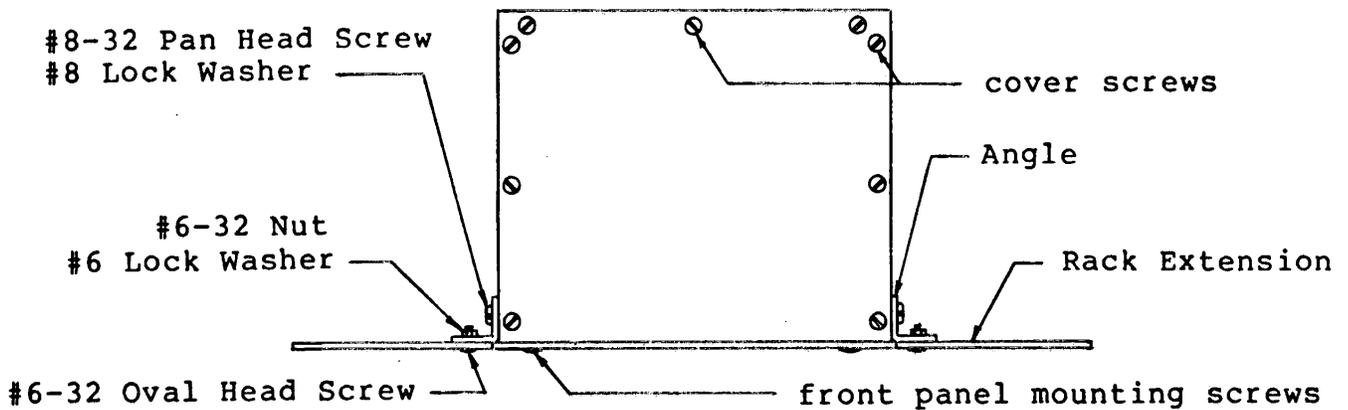


FIGURE 3. MOUNTING DETAILS FOR SR-21 RACK MOUNT KIT.

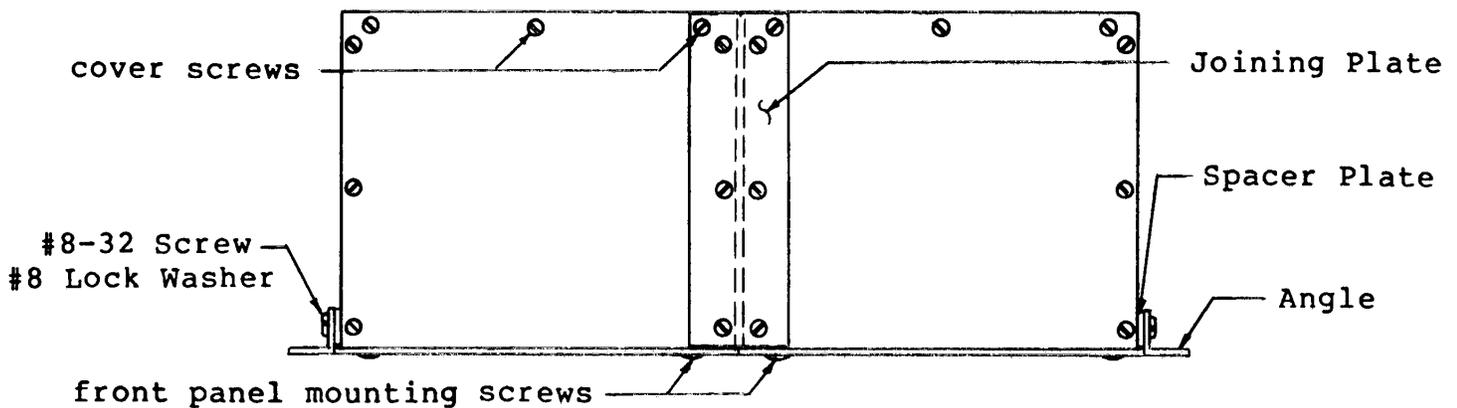


FIGURE 4. MOUNTING DETAILS FOR DR-21 RACK MOUNT KIT.

## 2.5 LINE VOLTAGE SWITCH

Unless a tag on the line cord specifies otherwise, the LA-5 was shipped ready for operation with nominal 115 VAC power mains. In order to change this for nominal 230 V (50 or 60 Hz), slide the VOLTAGE SELECTOR switch on the rear panel to the 230 position. The voltage is visible in a window next to the switch slot. Be sure to change the fuse to the correct value, 1/8-amp slo-blo when changing to 230 V operation or 1/4-amp slo-blo for 115 V operation. A small screwdriver should be used to move the recessed switch.

## 2.6 POWERING

The LA-5 may be operated from either 110 - 125 VAC or 220 - 240 VAC mains (50 or 60 Hz, single phase). As indicated in section 2.5, the nominal line voltage may be selected with a rear panel switch. BE SURE TO VERIFY BOTH THE ACTUAL LINE VOLTAGE, AND THE SETTING OF THE VOLTAGE SELECTOR SWITCH BEFORE CONNECTING THE LA-5 TO THE MAINS.

To comply with most Electrical Codes, the LA-5 is supplied with a three-wire AC cord, the grounding pin of which is connected to the chassis. In some installations this may create ground-loop problems. Ground loops can become very evident (as hum and buzz) if a significant potential difference exists between the AC conduit ground and the grounded metal enclosure in which the chassis is installed. If hum is experienced, check for the possibility of ground loops by using a 3-prong to 2-prong AC adapter, ungrounding the AC plug temporarily. This ungrounds the LA-5, and will probably cure the hum or buzz, but is not a substitute for proper system grounding. Be aware that unless the LA-5 is AC grounded, a safety hazard can exist. UREI accepts no responsibility for legal actions or for direct, incidental or consequential damages that may result from violation of any electrical codes.

## 2.7 EXTERNAL CONNECTIONS

Permanent input and output signal wires should be shielded cable, and connected in accordance with standard wiring practice, as indicated on the rear panel barrier strip. Connection may also be made with guitar cords, stereo cords, or TRS patch cords. Section 1.2 contains wiring information, which is augmented by the diagrams in Figures 5 and 6.

If the LA-5 is connected to a high impedance circuit, we recommend shunting the "+" and "COM" output terminals with a 620 ohm, 1/2 watt resistor. This assures proper loading for the LA-5. (See section 2.8 regarding input termination).

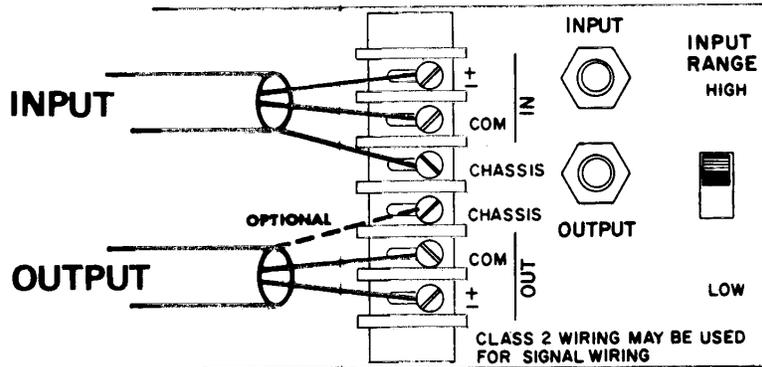


FIGURE 5. CONNECTING THE LA-5 WITH BALANCED INPUT AND BALANCED OUTPUT CIRCUITS.\*

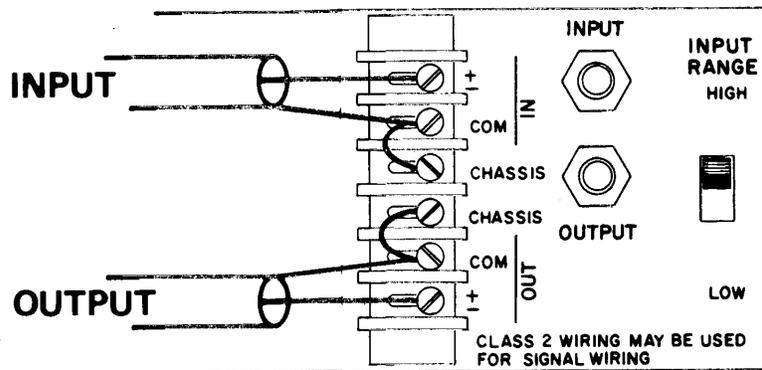


FIGURE 6. CONNECTING THE LA-5 WITH UNBALANCED INPUT AND UNBALANCED OUTPUT CIRCUITS.\*

\*With a balanced input and unbalanced output, or vice-versa, just use the appropriate connections suggested by each of the above diagrams.

## 2.8 IMPEDANCE AND TERMINATION

This section has been provided to better explain the nature of matching and bridging inputs, the use of terminating resistors, and the relationship between actual input impedance and nominal source impedance. Most electronic outputs work well when "terminated" by a load (connected to an input) having the same or a higher actual impedance. Outputs are usually overloaded when terminated by an impedance that is lower than the source impedance. When the input impedance is nearly the same impedance as the source, it is known as a "matching" input. When an input is 10 times the source impedance, or more, the input is considered to be a "bridging" input.

The UREI LA-5 has actual input impedances of 40 kohms (40,000 ohms) when used in a balanced configuration, and 20 kohms when used in an unbalanced configuration (they are high impedance inputs). This makes the LA-5's inputs suitable for use with virtually any nominal source impedance, low or high. The LA-5's inputs will bridge 150 ohm or 600 ohm (low impedance) sources and will match 10 kohm or greater impedance (high impedance) sources. In most cases, it is not necessary to place a 600 ohm "terminating resistor" across the input of the LA-5. In fact, most 600 ohm sources operate normally when bridged by a high impedance, acting as though no load were connected to the source device.

A 604 ohm termination resistor is required at the LA-5's output only if it is connected to a high impedance line. The only instance where an input termination resistor may be required is when the manufacturer of the source device specifically states that a terminating resistor is necessary. In such cases, there is usually a special type of output transformer in the source device, or the source device is made of precision, passive components (no transistors or tubes). An example of a unit requiring a terminating resistor is a passive equalizer. The terminating resistor assures optimum frequency response in that device. If a 150 ohm or 600 ohm resistor is specified for the source device, it should be installed at the end of the cable nearest the LA-5 in order to minimize possible hum, noise or signal losses in the cable.\*

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\* 600 ohms is not a standard resistor value. A 604 ohm precision resistor may be used, but 620 ohm or 680 ohm resistors are close enough in value to 600 ohms and are more widely available.

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## 2.9 INPUT AND OUTPUT LEVELS AND OVERLOAD

The LA-5's differential input amplifiers are capable of being driven by signals up to a level of +20 dBm (input range switch in HIGH mode), or 0 dBm (input range switch in LOW mode), above which clipping, distortion and/or slew-rate limiting occurs. The input overload LED turns on when peak signals exceed the clipping level, and will remain on long enough to be seen even if the excess signal is only a brief transient. To avoid distortion when the LED indicator flashes more than occasionally, either lower the output level of the source feeding the LA-5, or use an external attenuation pad. If the LED is illuminated virtually continuously, check the input range switch; if it is in LOW mode and the input source is +4 dBm nominal level, move the switch to HIGH mode.

The output amplifier is capable of delivering +24 dBm into a 600 ohm load (12.3 volts) or +20 dBm into a 150 ohm load (7.75 volts, which is actually +26 dBm referenced to 1 milliwatt). Average output levels can be monitored with the LA-5's VU meter, but remember that transient peaks may exceed the meter indication by as much as 20 dB. The actual output headroom depends on the program material, the threshold, and the compression ratio selected.

SECTION III  
OPERATING INSTRUCTIONS

3.1 GENERAL

The LA-5 Audio Leveler is designed to prevent an increase in output level beyond a pre-determined point (the threshold). The effect is illustrated in Figure 7. The point at which the compressed curve breaks away from the straight "No Gain Reduction" line is determined by the setting of the "Threshold" control. Incidentally, this point is sometimes known as the "rotation point" or "threshold point." It can be seen from the curve that there is virtually no increase in output level as the input level rises above the threshold point.

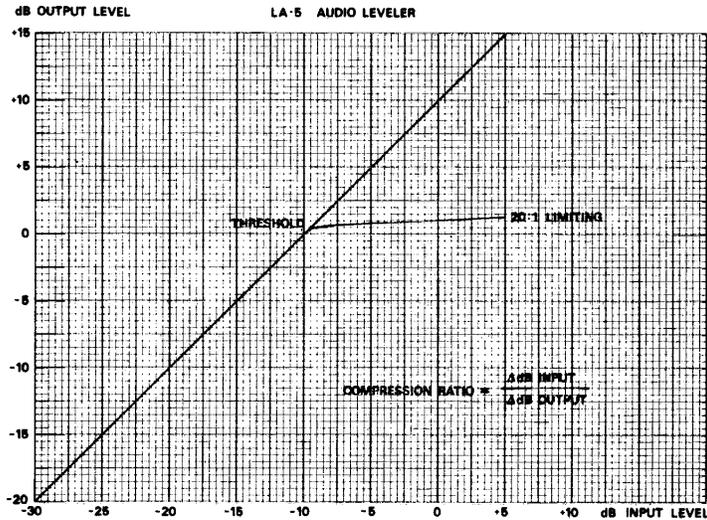


FIGURE 7. TYPICAL INPUT VERSUS OUTPUT LEVEL CURVE FOR LA-5.

### 3.2 CONTROL SETTINGS

1. The rear-panel "Input Range" switch should be pre-set at the appropriate position: "High" for nominal +4 dBm sources, or "Low" for nominal -20 dBm sources.
2. Turn the "Power" switch "On," and wait a few seconds to assure the system is warmed up and operating with complete stability. Set the "Meter" toggle switch to indicate "Output." Feed typical program material to the LA-5 input, and observe the "Input Overload" indicator to ensure it does not illuminate more than occasionally. If the indicator is frequently or continuously illuminated, lower the incoming signal level (with the output attenuator of the source device or with an attenuation pad), and check the position of the INPUT switch on the rear panel.
3. Set the "Threshold" control at "0" (full counterclockwise), so that the threshold is above any input signal. Set the "Meter" toggle switch to "GR" mode, and observe the meter. Gradually rotate the "Threshold" control in a clockwise direction, lowering the threshold point until the meter displays 3 dB to 5 dB of gain reduction (average), with occasional peaks of 10 dB to 20 dB downward deflection. Some experimentation may be useful in determining the optimum "Threshold" setting.

### 3.3 VU METER

The VU meter serves two functions: it indicates output level as well as gain reduction directly in dB. When the "Meter" toggle switch is placed in the "Output" position, the meter indicates the output level. 0 VU or 100% corresponds to a voltage output of +4 dBm.

The position marked "GR" permits the meter to indicate the amount of gain reduction or peak limiting directly in dB. During periods of no gain reduction, the pointer will return to 0 VU on the meter scale. The pointer is initially set to this position by means of the screwdriver adjusted control accessible through a hole in the LA-5 front panel.

## SECTION IV

### MAINTENANCE

#### 4.1 GENERAL

The LA-5 is an all solid-state unit, ruggedly constructed with only the highest quality components. As such, the LA-5 should provide years of trouble free use with normal care. All parts used are conservatively rated for their application, and workmanship meets the rigid standards you have learned to expect in UREI products.

NO SPECIAL PREVENTIVE MAINTENANCE IS REQUIRED.

#### 4.2 GAIN REDUCTION METER ZERO ADJUSTMENT

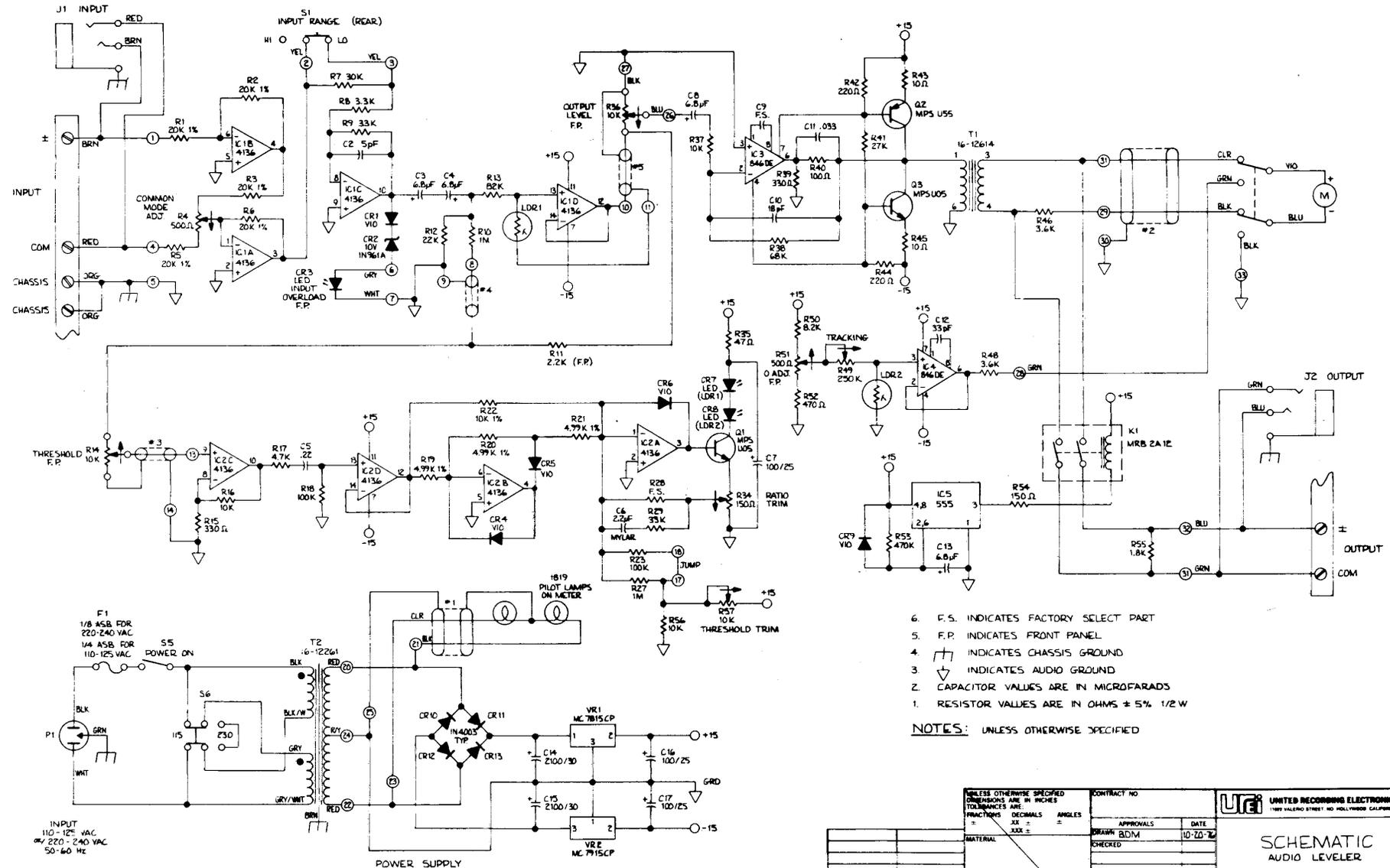
When switched to "GR" mode, and with no signal applied to the LA-5 input, the meter pointer should rest at 0 VU. If the pointer rests at some other position, allow about 1/2 hour for the LA-5 to warm up. Then insert a small slotted screwdriver in the hole on the LA-5 front panel just to the right of the meter, engaging the trimmer located 1-1/4" behind the front panel. Turn the screwdriver until the pointer indicates 0 VU. This completes the adjustment.

#### 4.3 REPAIRS AND WARRANTY

The LA-5 is factory warranted to the original purchaser against defects in material and workmanship for one year after initial purchase. This Warranty must be activated at the time of purchase by returning the registry portion of the Warranty Card to the factory. Should a malfunction ever occur, the dealer from whom the unit was purchased will be glad to handle return for factory repair; alternately, for prompt service, ship the unit prepaid freight directly to the factory. Be sure that it is well packed in a sturdy carton, with shock-absorbing material such as foam rubber, styrofoam pellets or "bubble-pack" completely filling the remaining space. Particular attention should be paid to protecting the controls and switches. Include a note describing the malfunction, and instructions for return. We will pay one-way return shipping costs on any in-warranty repair.

Because of specially selected components in this product, field repairs are not authorized during the warranty period, and attempts to perform repairs may invalidate the warranty.

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE



- 6. F.S. INDICATES FACTORY SELECT PART
- 5. F.P. INDICATES FRONT PANEL
- 4. INDICATES CHASSIS GROUND
- 3. INDICATES AUDIO GROUND
- 2. CAPACITOR VALUES ARE IN MICROFARADS
- 1. RESISTOR VALUES ARE IN OHMS ± 5% 1/2 W

NOTES: UNLESS OTHERWISE SPECIFIED

F1  
1/8 ASB FDR  
220-240 VAC  
1/4 ASB FDR  
110-125 VAC

INPUT  
110-125 VAC  
OR 220-240 VAC  
50-60 HZ

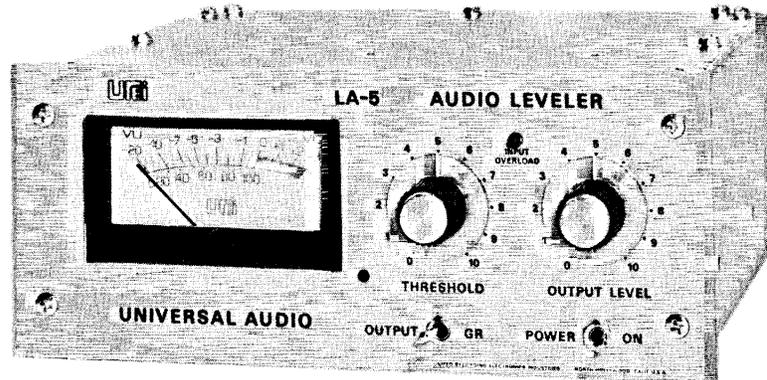
POWER SUPPLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES = XX ± = = XXX ± =		CONTRACT NO.	UNITED RECORDING ELECTRONICS INDUSTRIES 1189 VALENTI STREET, HO HOLLYWOOD, CALIFORNIA, 91604	
MATERIAL	APPROVALS	DATE	DRAWN ADM 10-20-74	
FINISH	CHECKED		SCHEMATIC AUDIO LEVELER	
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	SIZE MODEL NO DRAWING NO <b>D</b> LA 5 12646 SCALE SHEET 1 OF 1

# Universal Audio AUDIO LEVELER

MODEL  
LA-5

Covered by U.S. Patent No. 3,258,707



## MODEL LA-5

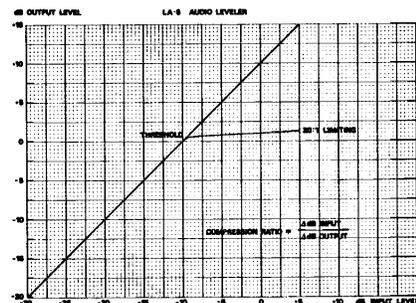
## FEATURES:

The LA-5 Audio Leveler has been developed by UREI to fill the needs of the sound reinforcement professional. Its characteristics have been optimized as the ideal combination for protection of amplifiers and speakers from power overload. Detection of the signal and control of the level, limit output power to a safe value preset by the operator or installer regardless of the input signal level.

The LA-5 removes much of the burden from the mixer who must compensate continually for poor microphone technique and large dynamic ranges during live performances. The patented type of detection and gain control used in the LA-5 are consistent with the way we perceive sound. This results in a smoothness of control unmatched by peak limiters of conventional design. Inputs and outputs are balanced, or may be used single ended. High input impedance and low output impedance allow maximum flexibility in patching and interface. The recent development of dedicated integrated circuits allow an even better signal-to-noise ratio than was possible in earlier designs.

Because its gain reduction circuitry is RMS responding, the LA-5 is not recommended for overmodulation protection of broadcast transmitters, disc or optical recorders, unless followed by a peak limiter, such as the UREI 1176 LN.

- Long-life LED Optical Attenuator.
- Smooth, natural-sounding RMS action.
- Simple operation — set and forget.
- Input overload indicator.
- True standard volume indicator (VU).
- Space-saving half-rack size.
- Competitively priced.
- UREI quality, of course.



**UNITED RECORDING ELECTRONICS INDUSTRIES**

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UREI company

MODEL  
LA-5

# TECHNICAL SPECIFICATIONS

## ELECTRICAL

<b>INPUT IMPEDANCE</b>	:	40 kohm, used as a balanced differential input. 20 kohm, used as an unbalanced single-ended input.
<b>OUTPUT LOAD</b>	:	150 ohms to infinity.
<b>EQUIVALENT INPUT NOISE</b>	:	-90 dBm (15.7 kHz bandwidth).
<b>GAIN</b>	:	40 dB maximum.
<b>FREQUENCY RESPONSE</b>	:	20-20,000 Hz, $\pm 0.5$ dB
<b>DISTORTION</b>	:	Less than 0.25% 30 Hz to 15 kHz.
<b>ATTACK TIME</b>	:	1 to 10 milliseconds for 63% correction depending on signal waveform.
<b>RELEASE TIME</b>	:	100 milliseconds to 1 second for 63% return depending on duration of limiting.
<b>COMPRESSION RATIO</b>	:	20:1.
<b>THRESHOLD OF LIMITING</b>	:	-30 dBm to +20 dBm.
<b>POWER OUTPUT</b>	:	+24 dBm into 600 ohm load, +20 dBm into 150 ohm load.
<b>EXTERNAL CONNECTIONS</b>	:	Barrier strip and phone plugs on rear.
<b>METERING</b>	:	Standard VU (0 Ref. = +4 dBm), Gain Reduction, LED indicator for input overload.
<b>MAINS REQUIREMENTS</b>	:	100 - 125 VAC or 200 - 250 VAC 50/60 Hz switch selectable, less than 10 W.
<b>ENVIRONMENT</b>	:	Operation +10°C to +50°C.

## PHYSICAL

<b>DIMENSIONS</b>	:	3½" high x 8½" wide x 8" deep. (89 x 216 x 203 mm).
<b>FINISH</b>	:	Panel is 1/8" brushed clear anodized aluminum. Chassis is cadmium plated steel.
<b>WEIGHT</b>	:	6½ pounds, 2.95 kg.
<b>SHIPPING WEIGHT</b>	:	8 pounds, 3.63 kg.
<b>ACCESSORIES</b>	:	SR-21 Single Rack Mount Kit. DR-21 Double Rack Mount Kit.