

**RAYMER MODELS  
1160 AND 1110**

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS AMPLIFIER TO RAIN OR MOISTURE.**

#### **DESCRIPTION**

The Raymer Models 1160 and 1110 are monaural solid state 60 watt and 100 watt RMS paging amplifiers. Four input channels are provided. These are identified as three paging channels and one music channel. The three paging channels are as follows: The PHONE channel has a 500/600 ohm balanced transformer input to provide proper termination for the paging access output port of registered telephone equipment such as a PABX or switchboard. MIC/LINE channel has balanced inputs which may be wired to accommodate either low impedance microphone or balanced line. The AUX channel has an unbalanced input with an input sensitivity of 250mv. for use as the paging source from other audio equipment such as a preamplifier or intercom system. The MUSIC channel may receive its source from an external signal such as a tape deck or tuner. Paging priority is automatically performed by a voice activated circuit which mutes this music channel when any of the paging inputs are used.

Separate BASS and TREBLE controls are provided to compensate for frequency response characteristics of the speaker system or the acoustical environment. In addition, a TRUMPET PROTECT switch is provided on the front panel. This reduces the low frequency power delivered to trumpet speakers below their "low frequency cut-off" to protect the speaker diaphragm from damage as well as reduce excessive loading of the amplifier at low frequencies.

Power output terminals are included to drive 4 ohm or 8 ohm speaker lines, or for power distribution lines, both 25 volt and 70 volt outputs are provided. In addition, a BOOSTER AMP output jack is provided so that supplemental amplifiers may be operated simultaneously to deliver more power to the additional speaker systems.

In addition to the power switch located on the control panel, a push-to-reset circuit breaker is included which

protects the entire unit from conditions beyond the safe operating limits which might cause component damage.

The entire unit is housed in a sturdy steel cabinet 15¼" long, 11¾" high, 4½" deep with two metal flanges which permit mounting on a wall surface.

#### **UNPACKING**

The unit should be removed carefully from the carton and inspected for any possible damage in transit. If there is any evidence of damage which might have occurred in shipment, immediately notify your supplier or the transportation company which delivered it. Claims for damage sustained in transit must be made upon the carrier. Save all packing material for the claim agent who will supply you with the proper forms and give you the necessary instructions for filling out a claim.

#### **INSTALLATION**

The Model 1160/1110 has ample vents for adequate ventilation; however, the unit must be installed with sufficient clearance around the cabinet to permit free air flow. Do not install the unit in a sealed box or cabinet without adequate ventilation. **DO NOT PLACE ANY OBJECT ON TOP OF THE COVER OR IN ANY WAY BLOCK THE AIR FLOW OF THE VENTS. DO NOT STORE OR OPERATE THE AMPLIFIER IN AREAS WHERE THE AMBIENT TEMPERATURE EXCEEDS 140° DEGREES F.**

In order to make connections to the unit, it is necessary to remove the front cover. This is done by removing the 4 screws which attach this assembly to the cabinet.

The amplifier has an AC power cord with a 3 prong plug. This cord should be plugged into a 2 wire circuit grounded 120 volt 60Hz outlet. **DO NOT REMOVE THE GROUNDING PIN FROM THIS PLUG** as it is the safety ground for the metal cabinet.

## CONNECTIONS

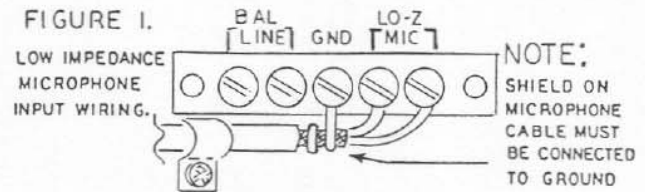
All connections are made on the lower portion of the chassis face. Connection to the MUSIC input, AUX input and BOOSTER AMP output require the use of a standard phono plug. All other connections are made by means of screw terminals.

The PHONE input to the amplifier is designed to provide a balanced 600 ohm termination for the paging access output port of registered equipment such as a PABX or switchboard. Such equipment contains the protective circuitry required by the FCC and has the appropriate registration number. When connected in this manner, no registration number is required for the Model 1120 or 1140.

**PHONE INPUT:** THIS UNIT IS NOT TERMINAL EQUIPMENT AND MAY NOT BE DIRECTLY CONNECTED TO THE NATIONAL TELECOMMUNICATIONS NETWORK. THE RINGER EQUIVALENT OF THE 500 OHM INPUT IS "Z." THIS MEANS THAT RINGING VOLTAGE SHOULD NOT BE APPLIED TO THIS INPUT.

Input connections are made by means of four screw terminals on the face of the unit. The input from this paging access port should be connected to the two terminals marked INPUT. The centertap of this input transformer is identified as C.T. When this input is connected to a balanced circuit, such as a phone line, it may be necessary to ground this centertap in order to eliminate noise induced by longitudinal imbalance of that line. The terminal marked GND is the same ground as the amplifier and may be used to ground the centertap. If the amplifier is not properly grounded or if there is noise on the power outlet to which the unit is connected, this technique will not eliminate all of the noise. In such a case it may be necessary to connect the C.T. terminal to a "waterpipe" ground for minimum noise.

**MIC/LINE:** The inputs for MIC/LINE are balanced. Input connections are made by means of five screw terminals on the face of the unit. Either a 150 to 250 ohm low impedance microphone or a balanced line may be used as the input to each of these channels. Low impedance microphone wiring requires the use of a shielded cable with two center conductors. These two conductors should be connected to the terminals marked LO-Z MIC and the shield connected to the terminal marked GND. No other wiring should be included inside of this cable and any unused wires in the cable should be connected to ground to prevent any R.F. pickup.



Line inputs should be connected to the two terminals marked LINE. This input has an impedance of 10,000 ohms and may be used as the bridging input from 500/600 ohm lines.

**AUX INPUT:** The AUX input is unbalanced high impedance with a maximum sensitivity of 250mv. This input may be used as the paging source from other preamplified signals such as a mixer or intercom. Input connection to this circuit requires the use of a shielded audio cable with a standard phono plug. This input is located on the face of the unit and is identified as AUX.

## SPECIFICATIONS

	MODEL 1160	MODEL 1110		
Power Output @ 1 KHz	60 WATTS RMS	100 WATTS RMS		
Frequency Response ± 2db	50 Hz to 15 KHz	50 Hz to 15 KHz		
Distortion at Rated Output	Less than 1.5% THD @ 1KHz	Less than 1.5% THD @ 1KHz		
Outputs	4 & 8 ohms unbal. 25 volts & 70 volts bal. Booster (ext. amp.)			
Output Regulation	Less than 2db No load to full load			
Tone Controls	BASS: ± 12 db @ 50Hz TREBLE: ± 13 db @ 15KHz			
Input Specifications	IMPEDANCE	SENSITIVITY	FREQUENCY RESPONSE	S/N RATIO
Aux	250K ohm unbal.	340 mv.	± 2db 50Hz-20KHz	70 db
Phone	600 ohm bal.	70 mv.	± 2db 400Hz-6KHz	71 db
Mic	150 ohm bal.	0.7 mv.	± 2db 70Hz-20KHz	58 db
Line	10K ohm bal.	70 mv.	± 2db 70Hz-20KHz	58 db
Music	200K ohm unbal.	280 mv.	- 2db, + 6db 20Hz-20KHz (includes loudness compensation)	71 db
Controls	7: Phone, Mic/Line, Aux, Music, Bass, Treble & Power On/Off			
Connectors	RCA type phono jacks for Booster Out, Music In, Aux In Screwtype Terminals for Power Output, Phone In, Mic In, Line In			
Indicator	LED Power Indicator and LED Overload Indicator			
Protection	Push-to-Reset Circuit Breaker			
Power Consumption	0.6 Amp 120V. AC 60Hz	1.0 Amp. 120V. AC 60Hz		
Size	15¼" W x 11¾" H x 4½" D			
Shipping Weight	20 lbs.	26 lbs.		
Features	Automatic Music Mute—Wall Mount—Tamper Resistant Controls			

## OUTPUT CONNECTIONS

20 or 40 watts RMS power output is provided for 4 or 8 ohm speaker lines or for distribution on 25 volt or 70 volt lines. Output connections are made by means of screw terminals on the face of the unit.

Long speaker lines have an appreciable resistance with resulting power loss. To avoid this power loss, the use of matching transformers on either 25 volt or 70 volt lines is recommended. This arrangement also allows the connection of multiple speakers which have different power requirements. In all cases it is advisable to run as heavy a wire as possible consistent with requirements. To avoid inducing hum into the speaker lines do not run speaker cables parallel to power line cables.

In some areas 70 volt distribution lines must be run in conduit. Check your local city electrical codes before installing a 70 volt speaker system to determine the local code requirements.

The 4 OHM and 8 OHM outputs are used when connecting directly to speaker voice coils. When a speaker or a series-parallel array of speakers with an impedance of 8 ohms is connected to the amplifier output, use the terminals marked 8 OHMS and GND. Use the terminals marked 4 OHMS and GND for a speaker circuit with a 4 ohm impedance. Do not simultaneously load both outputs at their rated impedance as this will appear as a demand for twice the rated output from the amplifier and represent an overload to the unit. In a similar manner, do not load both the speaker output and the 25 or 70 volt output simultaneously at full power demand. A combination of speaker loads is permissible using the various outputs from the amplifier; however, the sum of these demands should not exceed the rated power output of the amplifier.

The 25 VOLT and 70 VOLT outputs are used with speaker distribution systems in which each speaker has a line matching transformer which is connected for the specific wattage requirement of that speaker. This permits the use of a large number of speakers with various sound level requirements to operate from a common source. By rating these transformers in the wattage which they demand across a 25 volt or 70 volt line, there is no necessity in calculating total impedance. The total wattage demand of such a speaker line may be determined by adding up the

sum of all the speaker demands in the system. This total should not exceed the wattage rating of the amplifier used to drive the system. Connection to the 25 volt or 70 volt outputs is made by means of screw terminals on the face of the unit, use the terminals marked COMM and 25V (or 70V) according to the line desired.

Optimum performance of any amplifier depends upon proper impedance match between the output and the load. Connecting a load of mismatched impedance to an amplifier will deteriorate the overall performance of the system. To accurately measure the impedance of a speaker line, the Raymer Model LWT should be used. This test instrument permits direct reading of the wattage demand or impedance of a speaker line and is a valuable aid in determining opens, shorts or mismatch conditions.

## BOOSTER AMPLIFIER OUTPUT

The audio signal at this jack is the same signal which is applied to the amplifier portion of the Model 1160/1110. By connecting a supplemental power amplifier to this jack, power may be delivered simultaneously to additional speaker systems. A shielded audio cable with phono plugs at each end is required to make this connection.

## STONE CONTROLS

Both BASS and TREBLE controls are provided to compensate for frequency response requirements which may result from the characteristics of the speaker system or acoustical conditions. These controls have a turnover frequency of 1000Hz. The BASS control allows a maximum boost or cut of 15db at 50Hz and the TREBLE control allows a maximum boost or cut of 15db at 15KHz. These controls are located on the face of the unit. For a "flat" frequency response the screwdriver adjustment slots on these controls should be placed in a vertical position as indicated on the face plate. Clockwise rotation of these controls is used for boost; counterclockwise for cut.

## TRUMPET PROTECT

The Model 1160/1110 is equipped with a slide switch on the front panel which reduces the low frequency response of the unit to protect the diaphragms of trumpet speakers below their "Cut-off" frequency. In the ON position, the response is flat. This switch may also be used to increase speech intelligibility.

## WARRANTY

THIS UNIT HAS BEEN VERY CAREFULLY INSPECTED AND IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR FROM DATE OF SALE TO THE ORIGINAL PURCHASER. THIS WARRANTY DOES NOT EXTEND TO ANY UNIT WHICH BEEN SUBJECT TO ABUSE, MISUSE, NEGLIGENCE, ACCIDENT, IMPROPER INSTALLATION, OR ALTERATIONS. THE OBLIGATION OF CETEC RAYMER UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OF ANY DEFECT IN MATERIAL OR WORKMANSHIP AND/OR THE REPLACEMENT OF ANY DEFECTIVE PART, PROVIDED THE UNIT IS RETURNED TO CETEC RAYMER TRANSPORTATION PREPAID.

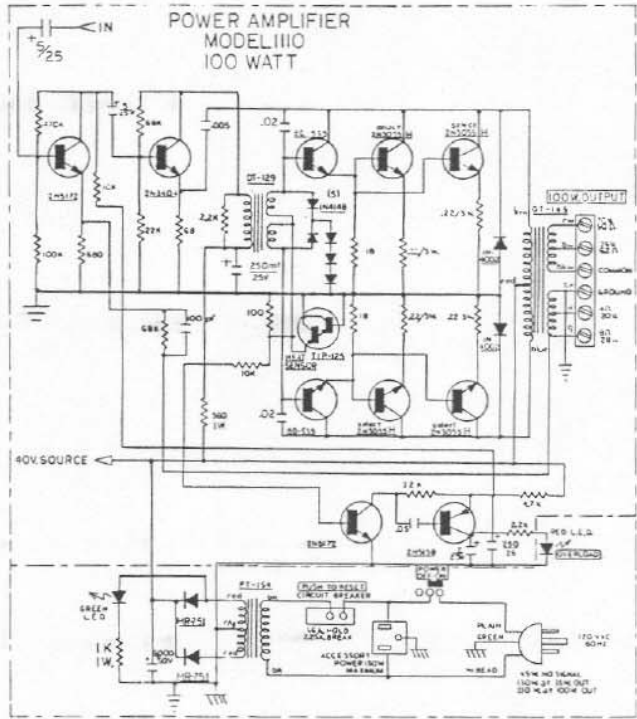
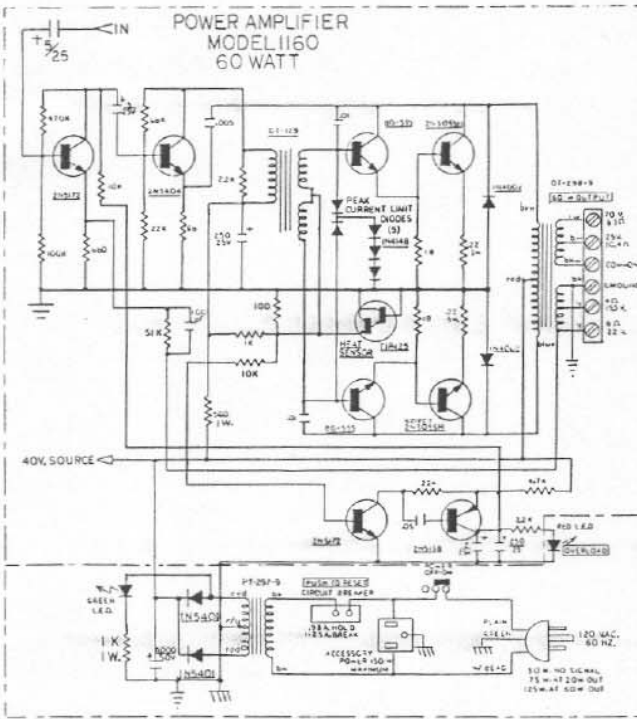
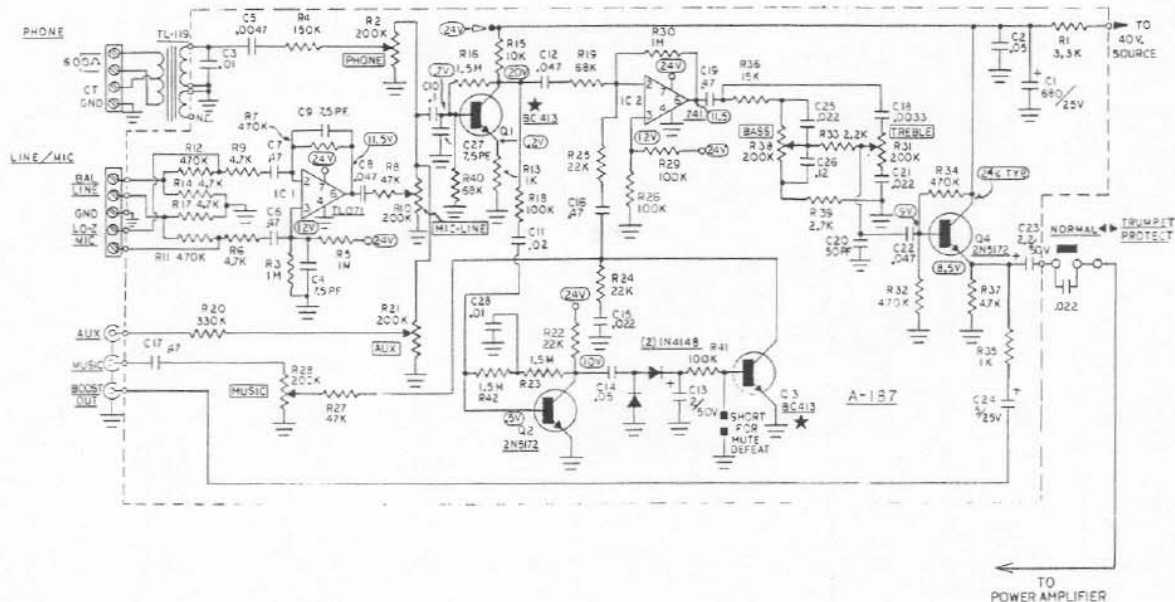
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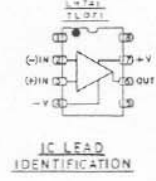
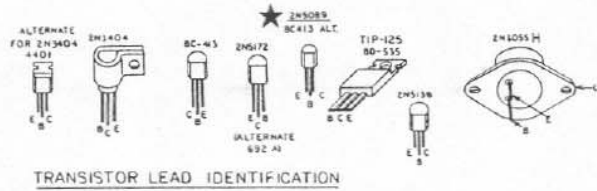
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 **Cetec Raymer**

Cetec Raymer Commercial Sound Products, Division of Cetec Corporation  
13278 Ralston Ave., Sylmar, CA 91342-7607  
(818) 362-9516 • Fax: (818) 367-5292



CAPACITOR VALUES ARE IN MICROFARADS UNLESS OTHERWISE NOTED



NOTE: PARTS AND CIRCUIT SUBJECT TO CHANGE FOR IMPROVEMENT WITHOUT PRIOR NOTICE

**Cetec Raymer** Division of Cetec Corporation  
 7315 Fulton Avenue • North Hollywood, California 91605

SCHEMATIC: RAYMER  
 MODELS 1160 & 1110  
 WALLMOUNT AMPLIFIERS

ENGINEER: C. KOEGE    DATE: 12/85    D.A.YOCUM



