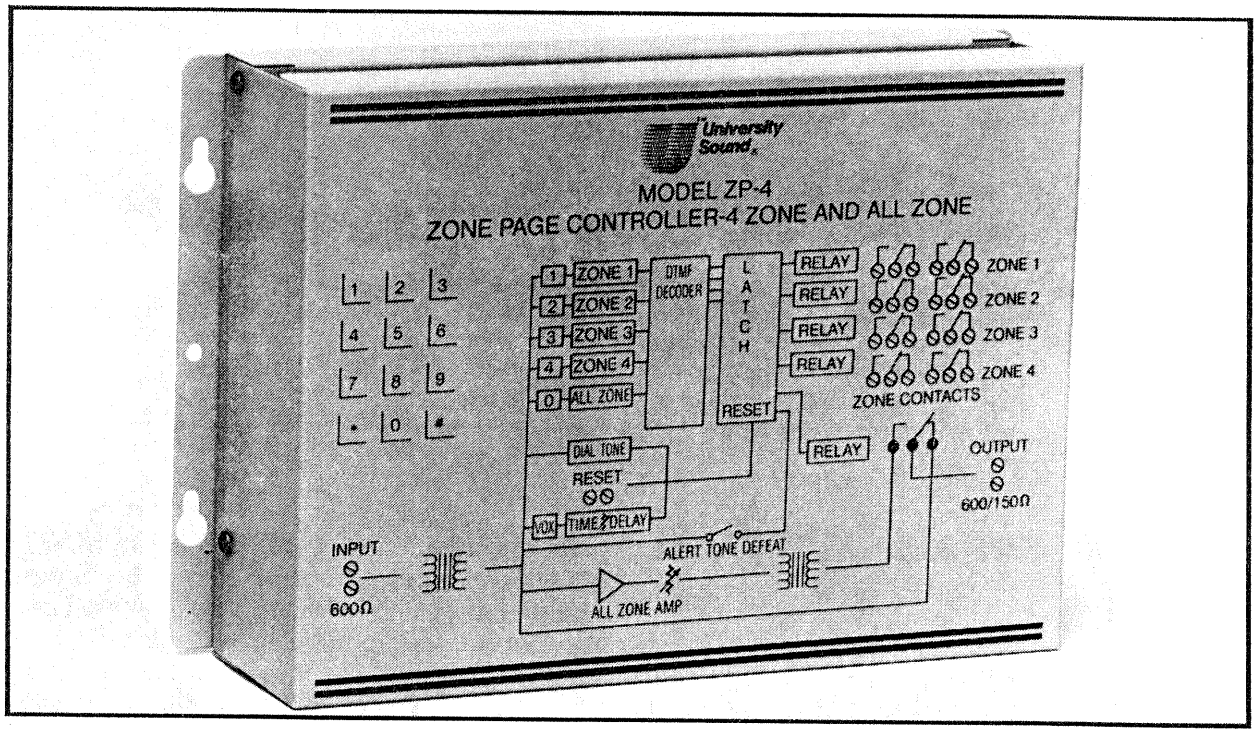
University Sound
a MARK IV company
COMMERCIAL SOUND PRODUCTS

TELEPHONE INTERCONNECT EQUIPMENT

OWNER'S MANUAL



ZP-4 ZONE PAGE CONTROLLER

TABLE OF CONTENTS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

WARRANTY (Limited)

University Electronics Components are guaranteed for one year from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to University Sound. Unit will be returned prepaid. Warranty does not extend to finish, appearance items, or malfunction due to abuse or operation under other than specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. Repair by other than University Sound will void this guarantee. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Service and repair address for this product:
University Sound Inc.,13278 Ralston Avenue, Sylmar, California 91342-7607

Phone : (818) 362-9516

Fax : (818) 367-5292

FEATURES

- Operates from 120 volts AC, 60Hz or 24 volts DC supply.
- Voice sensitive reset circuit (adjustable reset delay from 1 to 55 seconds).
- Dial tone reset.
- Manual reset.
- Paging system alert tone (switch selectable).
- Output level in *all zone* mode adjustable (0-10dB).
- Units can be connected in tandem for applications requiring up to 16 zones.
- Talk-back applications possible in *single zone* mode.
- 600 ohm transformer isolated input.
- All connections are made at screw terminal connectors.
- Unit designed for wall mount applications.
- Green LEDs provided as zone activation indicators.
- Red LED provided as power indicator.

DESCRIPTION

The Model ZP-4 Zone Page Controller expands a 600 ohm paging output port from a phone system, (or suitable paging adapter) to four zones and all-zones, as selected by means of the tones from the touch pad on the phone used as the paging source.

Zone control by the ZP-4 is made by means of four separate relays with double-pole/double-throw contacts. These may be connected to switch either amplifier inputs or outputs as needed to meet the requirements of the specified installation. While selecting any one of the four zones, the input and the output of the ZP-4 are isolated by a 1:1 600 ohm transformer. In this mode, the unit can be used in "talk-back" or two way applications. In the *all zone* mode, the ZP-4 can only be used for one way paging. In this mode, the output is amplified and has a level adjustment to allow the matching of levels between single zone and all zone paging.

Access to the paging output is automatically terminated by one of the following methods: ZP-4 senses the dial tone (350hz + 440hz) on the page input, the reset terminals are momentarily shorted together, or the voice sensitive reset circuit detects that no audio signal is present. The reset time on this circuit can be adjusted from 1 to 55 seconds.

The Model ZP-4 is housed in a sturdy wall mounted steel cabinet 17.1 cm (6.75") high by 26.7 cm (10.5") wide by 7 cm (2.75") deep with two metal flanges which permit surface wall mounting. A hinged service cover allows access for installation and adjustments. The entire unit is finished in a beige color baked enamel. Weighing only 3 lbs., the ZP-4 controller operates from 120 volts AC 60Hz with a power consumption of 16 watts or 24 Volts DC @ 400 ma.

CONTROLS AND SWITCHES

Alert tone mode switch (internal)

All zone variable output level (internal)

Voice Sensitive reset circuit (variable reset delay)

INDICATORS

Power LED

Zone activation LEDs

CONNECTIONS

Input/Output: 6 position terminal strips

Power: 2-terminal 120 volt AC plug in power pack (supplied) or screw terminals for 24 volt DC supply.

INPUT

Impedance: 600 ohms

OUTPUT

Impedance: 600 ohms

Insertion Loss: -1dB @ 600 ohms

"All Zone" Gain: 0-10 dB (Adjustable)

Frequency Response: 300-8000Hz +-2dB

RESET

External Switch Closure rated for 5 volts

Dial Tone (350Hz + 440Hz)

Silence Detect: 1-55 seconds (Adjustable)

RELAYS

Activation Frequency: DTMF dialing tones (FIG. 1)

Contact Ratings: AC 50VA/DC 30VA (Resistive Load)

Contact Ratings: AC 20VA/DC 10VA (Inductive Load)

POWER REQUIREMENTS

120 volts AC, 60Hz, 16 watts or 24 volts DC 400ma

DIMENSIONS

Height: 17.1 cm (6.75 in.)

Width: 26.7 cm (10.5 in.)

Depth: 9.53 cm (3.75 in.)

COLOR

Beige

SHIPPING WEIGHT

2.3 kg (5 lbs.)

NET WEIGHT

1.4 kg (3 lbs.)

SUPPLIED ITEMS

Power Pack

ENCLOSURE

Wall-mount, 20-GA steel

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 filing a claim.

NOTICE- Carton contains both ZP-4 unit and power pack. DO NOT discard packing from box material until you have removed power pack from box marked "POWER SUPPLY INSIDE".

INSTALLATION

The unit may be secured to a flat mounting surface by the use of #6 screws through the holes provided in the mounting flanges. Do not store or operate the unit in areas where the ambient temperature exceeds 140 degrees F (60 degrees C).

The ZP-4 should not be mounted in close proximity to equipment which generates a strong magnetic field such as power transformers or motors. This field will be induced into the unit and appear as hum or noise in the output of the amplifier to which it is connected.

To make circuit connections to the ZP-4, the circuit board must be exposed. To do this, loosen the four screws on the sides of the unit and hinge the cover upward. The input, output and relay connections are made by means of the screw terminal strips along the lower edge of the printed circuit board. For continued safety, return the cover on the unit and tighten the mounting screws when the installation is complete.

POWER CONNECTIONS

Power connections are made either by means of a 3.5 millimeter DC power jack (supplied for a power pack) or screw terminals. The power pack provided with the unit is equipped with a matching 3.5 millimeterd DC power plug to simplify the power connection.

If 120 volt power is not available to operate the power pack or emergency power backup is required, the unit may be operated from a 24 volt DC power source by using the screw terminals marked 24V. This voltage must never exceed 30V and must be capable of providing 400 milliamperes.

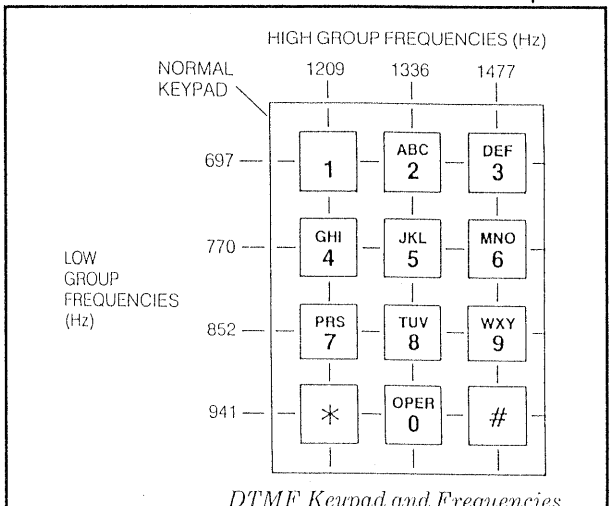
INPUT CONNECTIONS

Input connections are made by means of two screw terminals on the face of the printed circuit board marked **600 ohm input.** This input is designed to provide a balanced 600 ohm termination for the paging output port of registered equipment such as a PABX or Interface equipment such as the University TAP (trunk access paging) unit. Such equipment contains the protective circuitry as required by the FCC and has the appropriate registration.

NOTE: THIS IS NOT TERMINAL EQUIPMENT AND MAY NOT BE DIRECTLY CONNECTED TO THE NATIONAL TELECOMMUNICATIONS NETWORK.

Before beginning the installation of the ZP-4, make certain that the zone controller will be compatible with the telephone system. The audio signal from the paging port (or paging adapter) MUST include voice DTMF tones, and dial tone (350hz +440hz) *Rotary or pulse dialing will not activate the ZP-4.*

Compatibility may easily be tested by connecting a telephone line test set across either the paging output port of a PABX or output connectors of an interface unit that will be connected to the input of the controller. While listening in the test set, have someone access the page and talk, then press the tone pad several times. Both the voice and the tone signals must be audible in the test set. In some phone



DTMF Keypad and Frequencies

Figure 1

systems the tones are inhibited from the paging port and the ZP-4 will not be compatible for zone control. In such cases, another output port must be used which does not inhibit the tone signals.

RELAY CONNECTIONS

Before connecting the ZP-4 Zone page controller to any paging equipment, note that there are some restrictions which apply to the relay circuits for proper operation :

1) The maximum current rating of each relay contact is 1 amp at 24 volts DC with a non-inductive load. However , the maximum capacity of each contact is reduced to 20 watts when AC voltage is operated into an inductive load. Therefore, the maximum wattage switched by each contact should be limited to 20 watts to prevent shortened service life of the relay. When switching loads greater than the relay contact ratings, use a University Sound Model RSP-1 Self Powered Relay to repeat the function of the ZP4 contacts to switch a greater load (Figure 4).

2) Do not connect both the input and output circuits of an amplifier to the two switched contacts of the same relay. The capacitive feedback between these circuits can cause the amplifier to oscillate.

WARRANTY NOTICE

DAMAGE TO THE RELAY CONTACTS IS NOT COVERED BY THE WARRANTY. POWER THROUGH THESE CONTACTS SHOULD BE LIMITED AS INDICATED IN THE INSTRUCTIONS.

ZONE PAGING ARRANGEMENTS

There are a number of methods to achieve zone paging, depending on the function required and the physical nature of the installation. The relay contacts of the ZP-4 may be wired in a variety of ways to provide zone selection by any one of three methods:

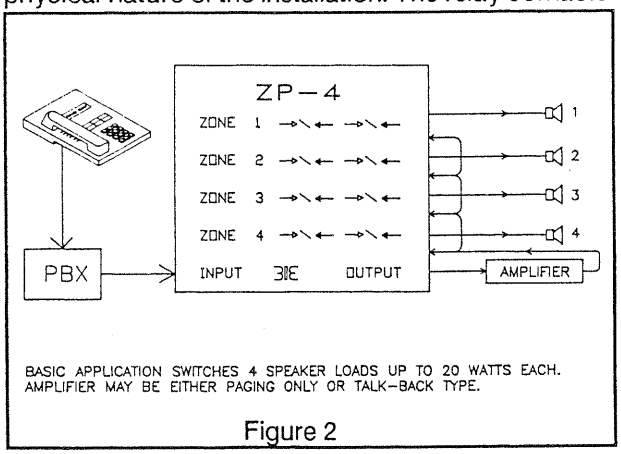


Figure 2

1) Switching the output of an amplifier to the speakers in each zone (Figure 2).

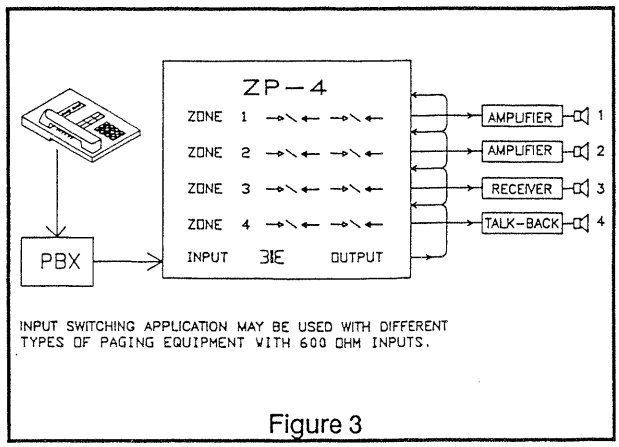


Figure 3

2) Switching the paging signal to the input of an amplifier in each zone (Figure 3).

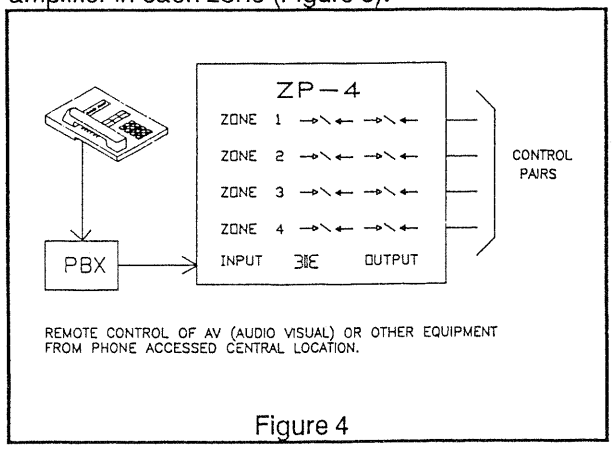


Figure 4

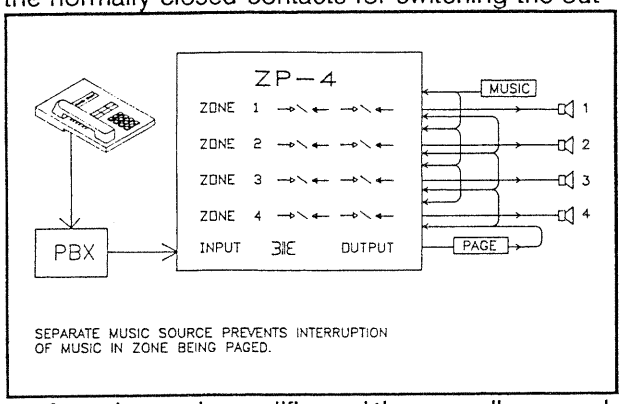
3) Switching control circuits other than audio such as an RSP-1 (Figure 4).

The advantages and disadvantages of each method should be evaluated in the initial design stage. Example : The cost saving advantages of using only one amplifier and switching its output may be outweighed by other considerations. These include the need for external relays for high wattage circuits , the necessity of heavy wire on exceptionally long speaker runs, and background music interruption of non-page zones unless an additional music amplifier is included. On the other hand, supplying separate paging amplifiers for each zone represents increased cost and may conflict with other requirements of the system. For example, the ability to use a phone pair to page over very long distances, or the

ability to mix different type of functions in the same system such as talk-back amplifiers and background music receivers.

ZONE PAGING ARRANGEMENTS

In installations requiring music to play continuously in zones not being paged, the ZP-4 should be connected as shown in Figure 5. This installation requires two amplifiers:one to be used as the music amplifier and the other to be used as the paging amplifier. Use the normally closed contacts for switching the output from the music amplifier and the normally opened contacts for the paging amplifier.



In applications where the phone system does not provide DTMF through the paging port, the University Sound model TAP should be used (Figure 6)

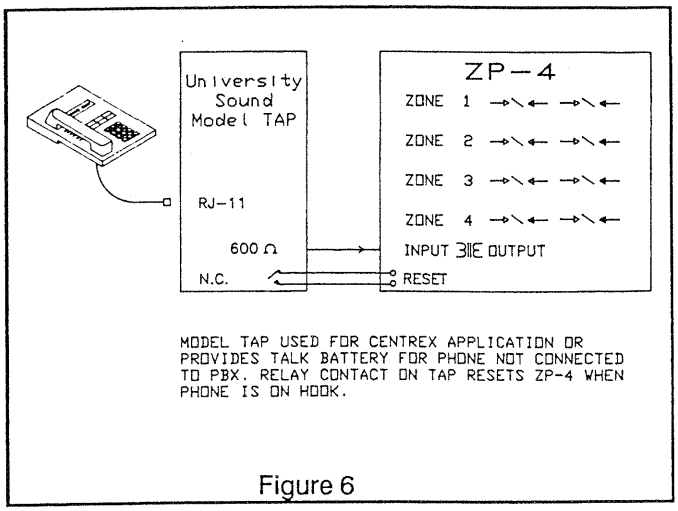


Figure 6

INSTALLATIONS WITH MORE THAN 4 ZONES

If more than 4 zones are required, additional ZP-4 units may be connected in tandem (Figure 7). The 600 ohm input terminals of the control unit should be connected to the common contacts of each zone relay (common contacts of control unit all connected in parallel). The normally opened contacts of each zone should be connected to the 600 ohm input of each ZP-4. In this installation, the relays that actually control the zones cannot be activated until the appropriate zone on the control unit is activated.

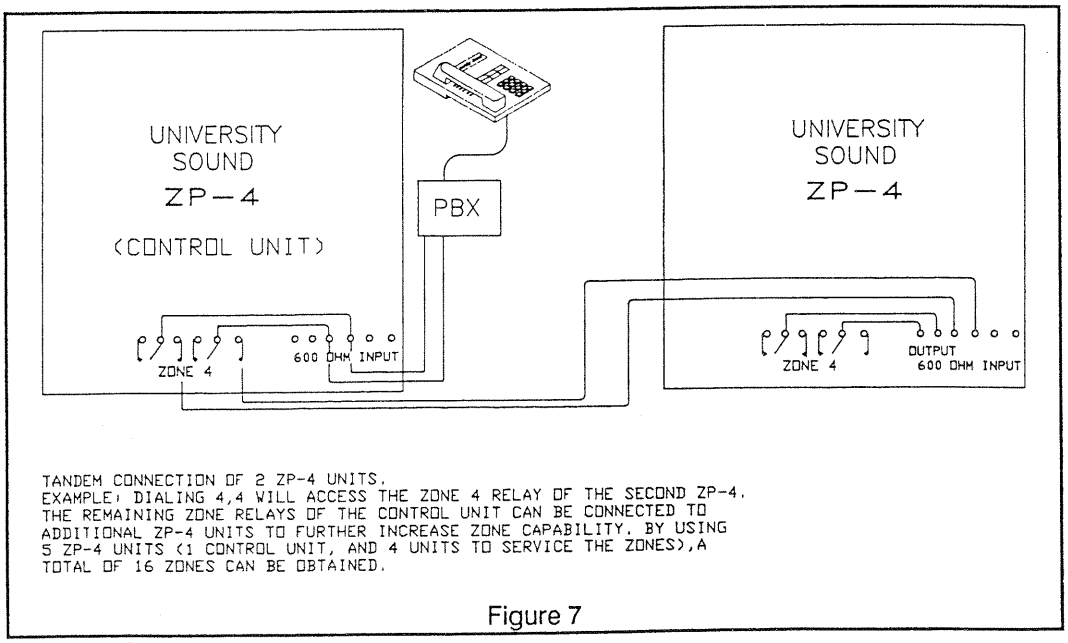


Figure 7

OPERATION

The first step in activating a zone is to access the paging port by the normal method required by the phone system in use. In most cases this is a touch button code. When the page port has been accessed, depress the desired keypad to select the zone.

ZONE 1 - Touch button "1" (one)

ZONE 2 - Touch button "2" (two)

ZONE 3 - Touch button "3" (three)

ZONE 4 - Touch button "4" (four)

ZONE ALL - Touch button "0" (zero)

The unit is now activated until any one of three disconnect functions occurs:

1) There is silence on the phone line for a period of 1 to 55 seconds as set by the time adjustment on the printed circuit board.

2) A dial tone is present because the paging phone is "hung-up".

3) A switch closure is supplied to the RESET terminals.

When the page is completed and the zone paging relay is reset, the audio output from the ZP-4 is automatically muted until the next zone page.

CONTROLS AND SWITCHES

(Refer to Figure 8 on page seven)

ALERT TONE: The alert tone (540 Hz) is provided as an audible indication that the paging system has been activated. This feature can be operated in the following modes:

PHONE MODE: Zone relays activate immediately after the alert tone has been provided to the operator.

PAGE MODE: An alert tone is provided to the operator and to the ZP-4 output terminals when the zone relays are activated, the alert tone can be defeated by cutting a jumper (Figure 8).

ALL-ZONE LEVEL CONTROL: (VR-4 on Figure 8) Controls the output level of the ZP-4 when used in *all zone* mode. The *all zone* amplifier has a maximum gain of 10 dbv.

TIME ADJUSTMENT: The reset delay adjustment (VR-3 on Figure 8) establishes the delay between the time that the audio signal is no longer present and the ZP-4 resets (1 to 55 seconds).

OPERATION WITH MORE THAN 4 ZONES

In applications where more than 4 zones will be required, units can be connected in tandem to provide up to 16 zones of control (Figure 7). When operating the system in this type of installation, the first ZP-4 is used as the control unit. It is necessary to enter 2 digits before the appropriate zone is accessed. The first digit activates the control unit: this allows access to the units that control the actual zones. The alert tone from the control unit will indicate when the second digit can be entered to access the appropriate zone.

Example: Depressing key #1 on the telephone keypad will activate the first zone of the control unit; the alert tone is supplied to the telephone headset to indicate that the second digit can be entered. The second digit will select the appropriate zone in the ZP-4 that is connected to "ZONE 1" of the control unit. For example, the combination (#2,#4) selects the fourth zone of the ZP-4 connected to "ZONE 2" of the ZP-4 being used as the control unit.

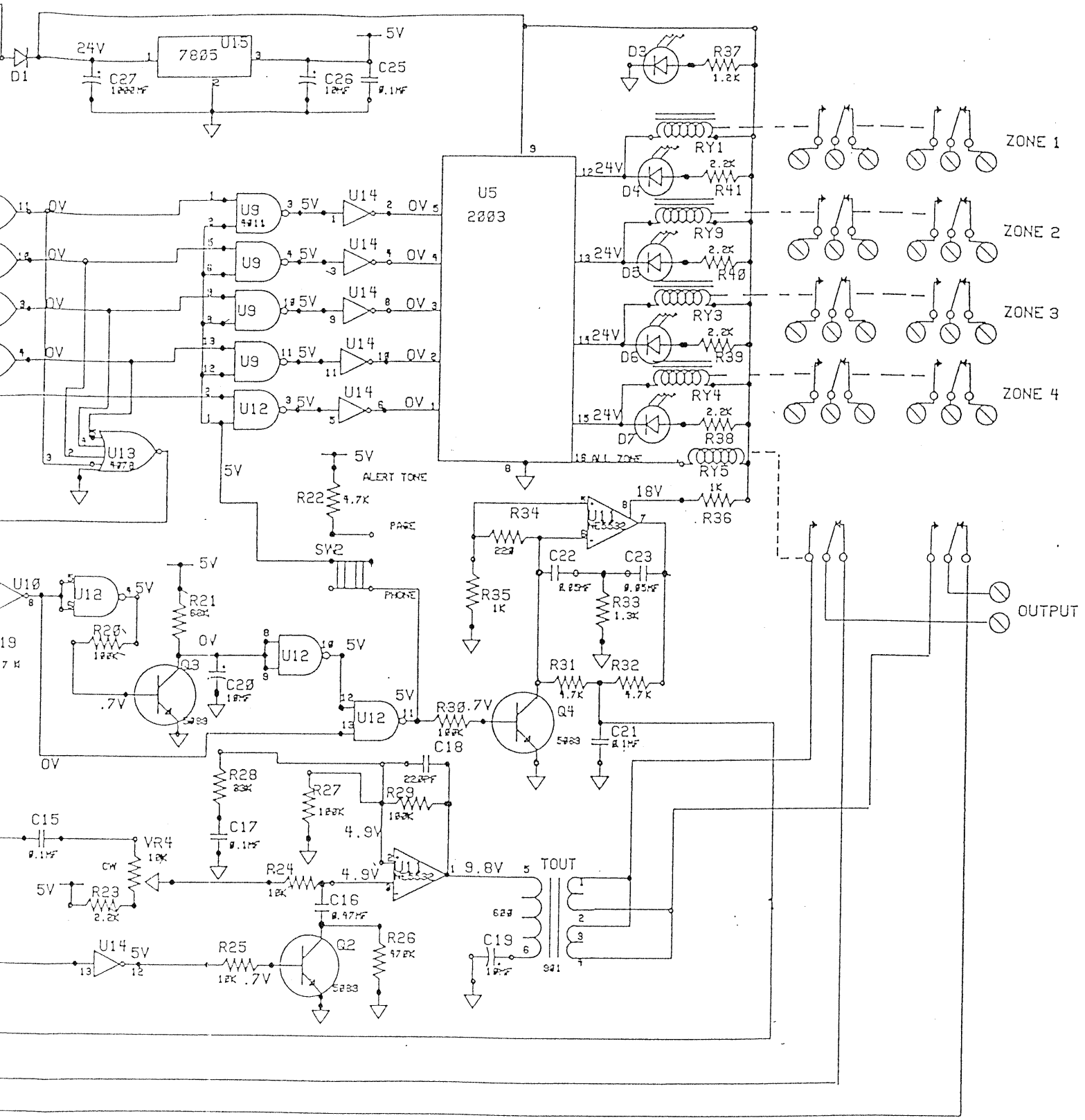
MAINTENANCE

Properly installed, the University Sound Model ZP-4 should give years of trouble free duty under normal operating conditions. Any service or repairs should be performed at the factory to insure continued proper operation .

DO NOT adjust VR-1 or VR-2 (Figure 8); these are factory set to accept standard dial tone frequency.

DO NOT remove any integrated circuits from their sockets . Several C-MOS devices in the unit may be destroyed by the static charge caused from improper handling .

Please refer to page 2 of this manual for futher instruction regarding repair of this product and its warranty.



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			ENGR KLK	
Ø2	18Ø	9-89	APRVD	
REV	ECN #	DATE	TOLERANCE .X : .Ø15 .XX : Ø.Ø1Ø .XXX : Ø.Ø05	

UNIVERSITY SOUND INC

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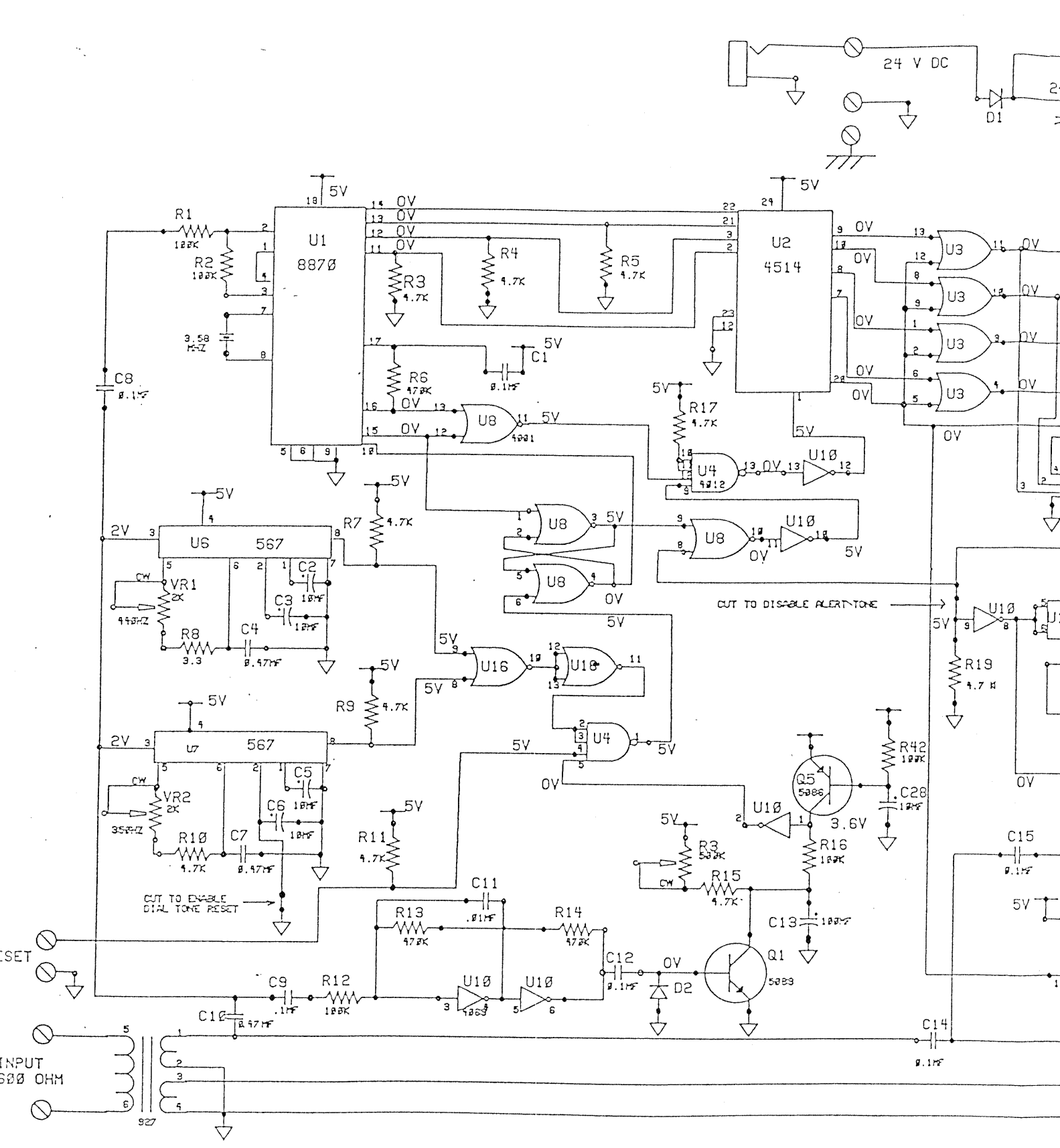
SHEET 1 OF 1



ELECTRICAL SCHEMATIC ZP-4 (REVISED 9/8

NOTES:

1) VOLTAGE SHOWN IN NON-PAGE MODE REFERENCED TO GROUND.

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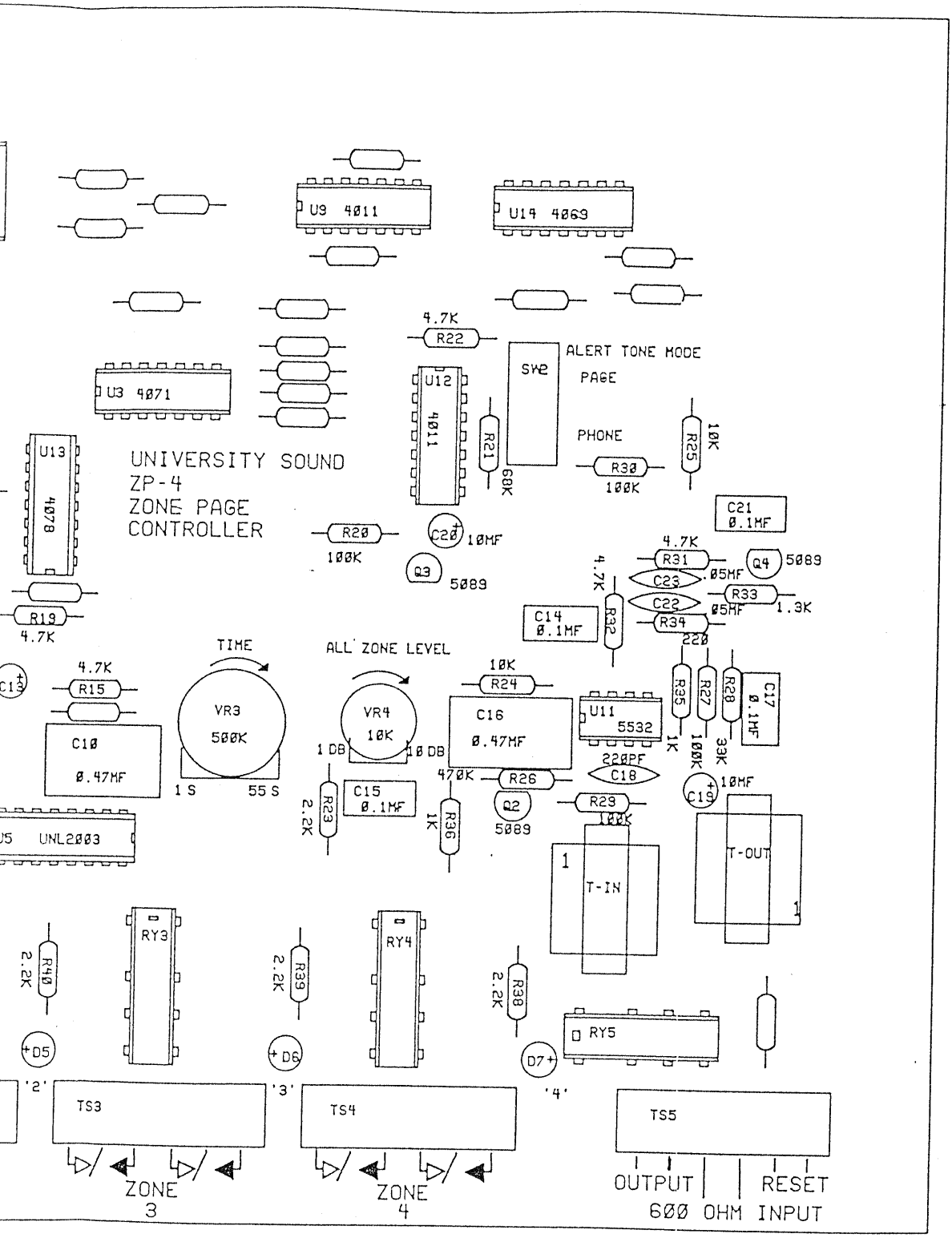
REV



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ENGR	KLK
APRVD	

TITLE
ZP-4
ZONE PAGE
CONTROLLER

UNIVERSITY SOUND INC

SIZE	DRAWING #	REV
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SHEET 1 OF 1

TOLERANCE .X ± .015 .XX ± 0.010 .XXX ± 0.005

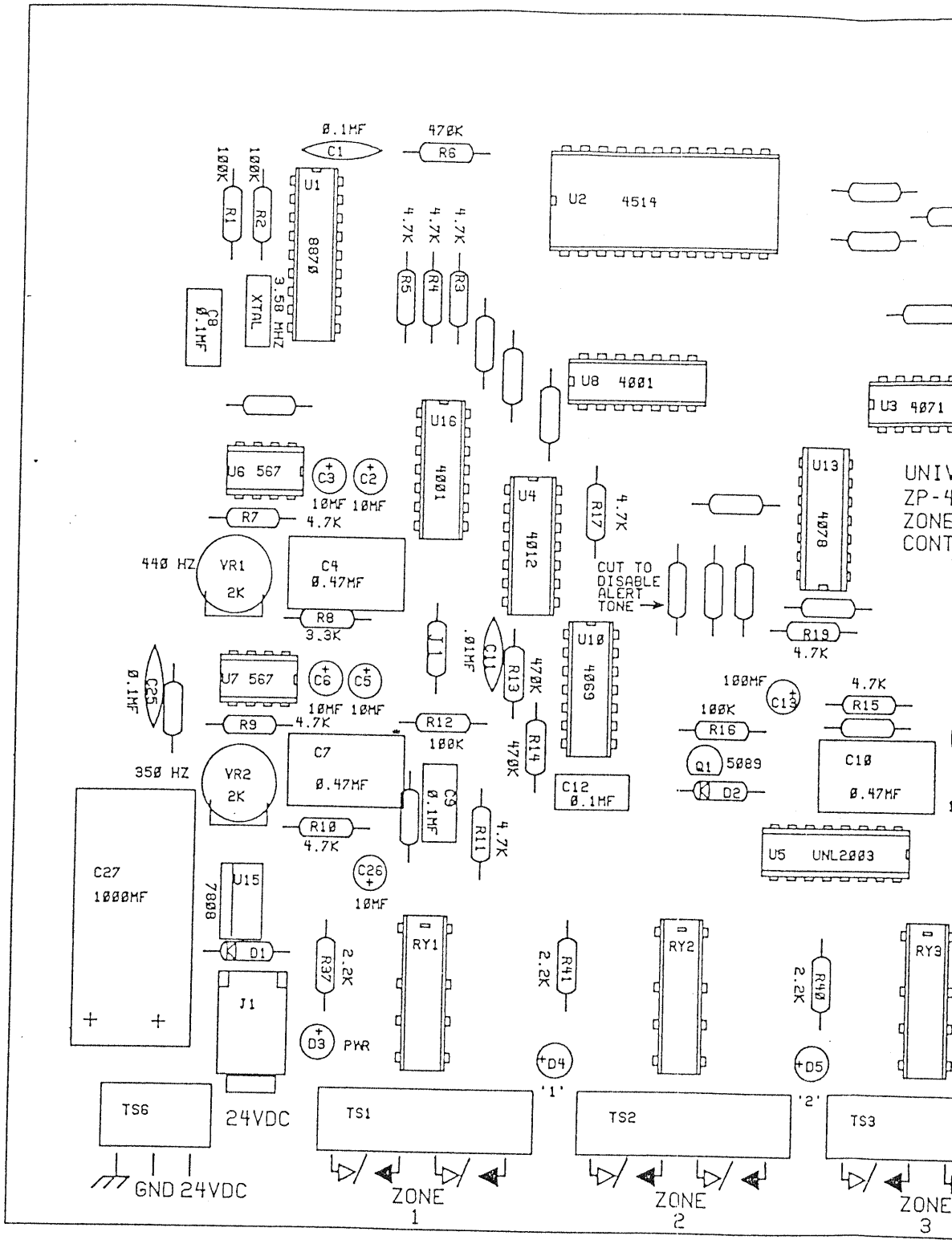

FIGURE 8 (REVISED

NOTES:

1) UNLESS OTHERWISE SPECIFIED, RESISTORS ARE ZERO OHM
2) REMOVE JUMPER (J1) TO ENABLE DIAL TONE RESET

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