

UM-33
Cue Amplifier



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Conex Electro-Systems, Inc. Bellingham, WA 98226

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SPECIFICATIONS

Size	19" X 1.75" X 6"
Weight	2 Lb
Mounting	Standard Rack Mount
Power Requirements	115 VAC, 60 Hz, 10 watts max
Audio Input Level	+20 dB nominal maximum 10K ohm transformerless bridging
Line Buffer Amplifier	
Noise:	-70 dB with respect to 0 dB in.
Distortion:	.2% THD max at 0 dB in.
Speaker Amplifier	
Output power:	2 watts per channel into 8 ohm load
Noise:	-60 dB with respect to 100 mw out.
Distortion:	0.1% THD max.
Oscillator	
Level:	Adjustible from off to +10 dBm
Frequency:	Selectable 40 Hz, 400 Hz, and 7500 Hz
Distortion:	0.1% THD max.
Level Meters	
Type:	12 LED stereo bar-graph
Calibration:	Front panel adjustable for -10 to +24 db full scale with -20 dB point adjustment.
Internal Speakers:	3" diameter on sloping baffles.

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INTRODUCTION

The Conex Electro-Systems cue amplifier is a general purpose audio switcher and monitor amplifier. With its eight stereo input channels and one stereo output channel, the UM-33 provides the easiest, least expensive and most compact way of handling common audio switching and monitoring problems.

The general nature of the UM-33 lends itself to a variety of applications including:

- **Tape Recorder Input Selector** The built in oscillator makes head alignment and record equalization easy.
- **Console Input Expander:** Expand a console input by 8 channels.
- **Automation Cue Amplifier:** Check levels of audio sources feeding automation. Simplifies cueing tapes and checking head alignment.
- **Program Line Selector:** Connect sources that could feed the program line as inputs to the UM33. Selecting what feeds the transmitter then becomes as easy as pushing a button. (Great for freeing the console for other uses.)
- **General Purpose Monitor:** Connect audio sources that you would like to monitor ... network, program line, news room, etc. Use the UM-33 to check audio levels and monitor audio equality with external speakers.

As you can see, the UM-33 has potential use in every studio in a radio station.

INSTALLATION

The UM-33 is designed to be rack mounted. It is suggested that it be placed in a rack with the rear terminal strip can be easily accessed. If the LED VU meters are to be used in your application, the unit should be placed at a height that makes viewing easy.

For the highest quality speaker audio, we recommend connecting external speakers to the UM-33. Relatively high efficiency bookshelf type speakers would be appropriate. If you choose to use the internal speakers, the unit should be placed in a rack that has other equipment above and below it to provide proper baffling. The internal speakers were designed to provide a simple self contained method of monitoring audio sources where quality is not critical.

CONNECTING INPUTS

Up to eight stereo sources can be connected to the UM-33. Connections are made to inputs 1 thru 8 as indicated on the back panel. Note that each input has provision for balanced inputs and a shield connection. If unbalanced sources are to be connected, the '+' input terminal should be used for the audio input with the common and/or shield connected to the '-' and 'G' terminals. Input levels should be in the range of - 10 dB to +8 dB for proper operation. Standard practice should be followed to prevent ground loops.

CONNECTING OUTPUTS

The UM-33 has two separate stereo outputs. The 'direct out' output is simply the input switched directly to the output through the mechanical contacts of the front panel switch.

The 'buffer out' output is audio that is isolated from the input by buffer amplifiers. Its output impedance is 600 ohms and can be used in either a balanced or unbalanced configuration. Note that when using unbalanced inputs, the outputs will be unbalanced. The circuit has been designed to provide unity gain between input and output. For most applications, the buffered output should be used.

INTERNAL/EXTERNAL SPEAKER CONNECTION:

To use the internal speakers, it is necessary to put jumpers from EXT L to INT L and EXT R to INT R on the terminal strip. The ground connections are internally connected.

Whether the internal speakers are connected or not, the external speakers are connected to the EXT speaker outputs. The external speakers should be rated at 8 ohms and should be relatively efficient. The UM-33 will drive external speakers at 2 watts per channel.

OPERATION

FRONT PANEL CONTROLS: (See Figure 1)

1. Internal speakers ... left and right.
2. Speaker ON/OFF switch. When in the OFF position, both internal and external speakers are off.
3. Headphone jack. Headphone audio is always present regardless of the position of the speaker ON/OFF switch.
4. LED UV meter.
5. -20 dB LED VU meter calibration controls (see ADJUSTMENTS).
6. 0 dB LED VU meter calibration controls.

7. Stereo/MONO switch. Affects speaker/headphone audio only. When in STEREO mode, speakers and headphones are fed stereo audio. When in MONO mode, the inputs to the speaker amplifier are tied together for mono audio.
8. LEFT SPEAKER VOLUME CONTROL.
9. OSCILLATOR FREQUENCY SELECT SWITCH. This switch determines whether the oscillator will operate at 40 Hz, 400 Hz or 7500 Hz. Note that the oscillator output is switched directly to the switched input bus. This means that the oscillator will feed the selected input as well as the output. This could be desirable in some applications, but for the most part, the inputs should be deselected while using the oscillator. To deselect all inputs, lightly press any non-selected input until all buttons are released. See figure 2.
10. RIGHT SPEAKER VOLUME CONTROL.
11. OSCILLATOR LEVEL CONTROL. Determines amplitude of oscillator.
12. OSCILLATOR ON/OFF SWITCH. Push this switch to turn the oscillator on. Push again to *turn it off*.
13. INPUT SELECTOR SWITCHES. These are interlocking switches that select the input to the monitor amplifier.
14. INPUT LEGEND. This legend strip allows the labeling of the input switches. For convenience, the strip may be taken out of the holder for labeling.
- 15,16 INPUT/OUTPUT JACKS: These jacks are tied directly to the input stereo bus. (The upper jack is left channel, the lower is right channel.) These jacks are useful for checking distortion or frequency response of an audio source from the front panel of the UM-33. Also...because the jacks are connected directly to the stereo bus before any amplifiers, audio can be fed into the jacks and out the selected input ... as well as the outputs.

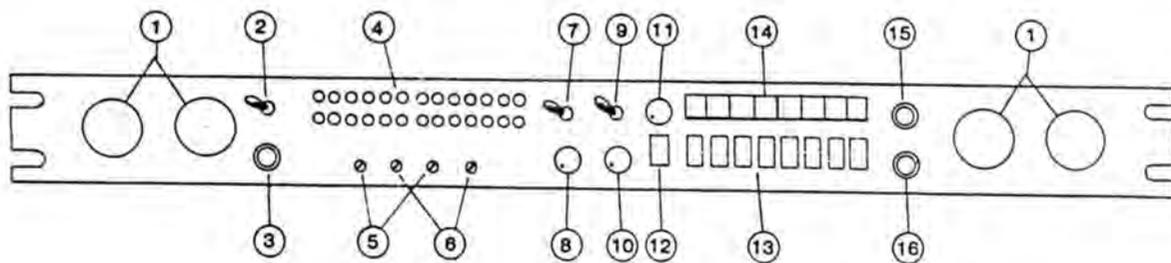


FIGURE 1

ADJUSTMENTS:

The only adjustment provided in the UM-33 is the calibration of the VU meter. The procedure is simple and can be performed from the front panel

First decide what your zero level signal out should be. For example, if you would like your output signal to be +4 dB, feed a tone to the left input. (or use the built in oscillator.) Using an audio voltmeter, adjust the tone level until a +4 signal is indicated on the voltmeter. Now adjust the left "0" calibration pot on the front panel until the "0" Db LED just lights. Next, reduce the input by 20 dB as indicated on the volt meter and adjust the -20 dB calibration pot until the -20 dB LED just lights.

Repeat the above for the right channel. The meter calibration is now complete

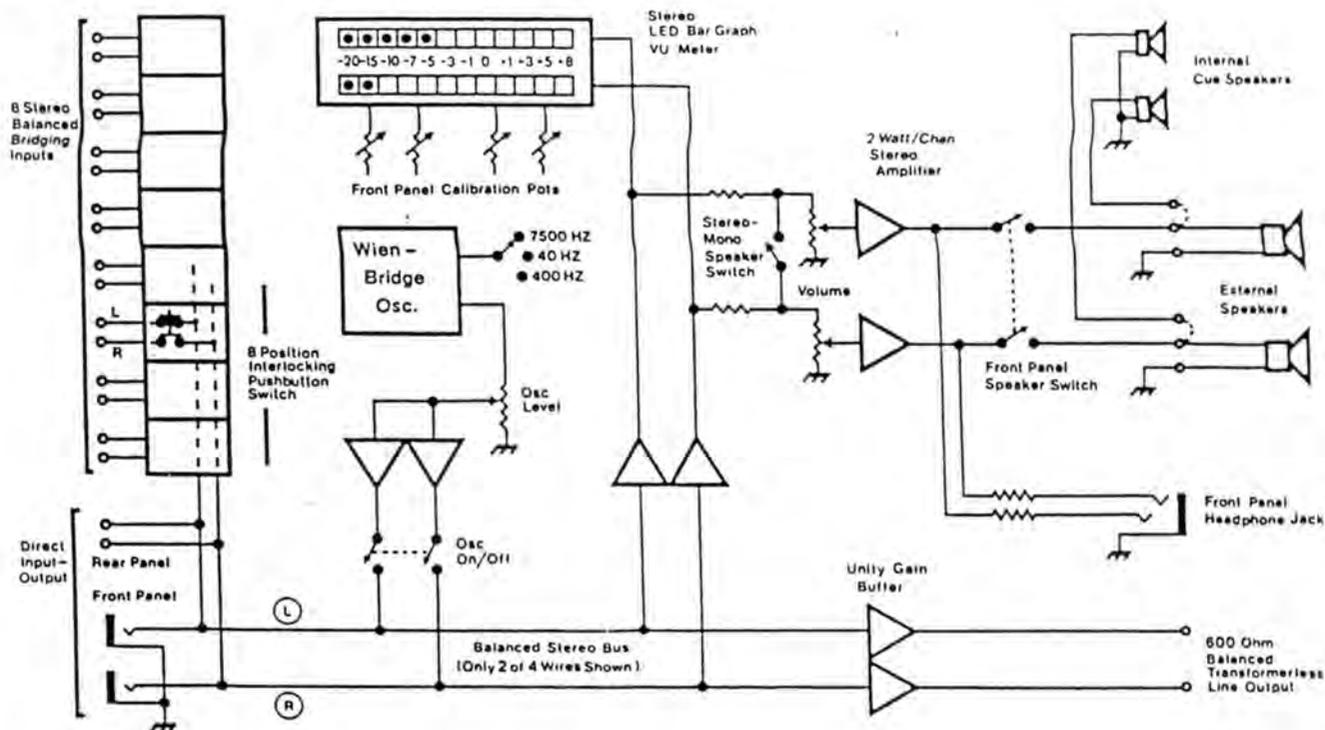
CIRCUIT DESCRIPTION: (refer to figures 1 & 2)

A built in three frequency tone oscillator can be connected to the switched input bus by pressing the OSC ON/OFF button on the front panel. (#12, figure 1). A gain control (#11, figure 1) allows the setting of the oscillator output level. The frequency (40, 400 or 7500 Hz) is selected by a three position toggle switch (#9, figure 1).

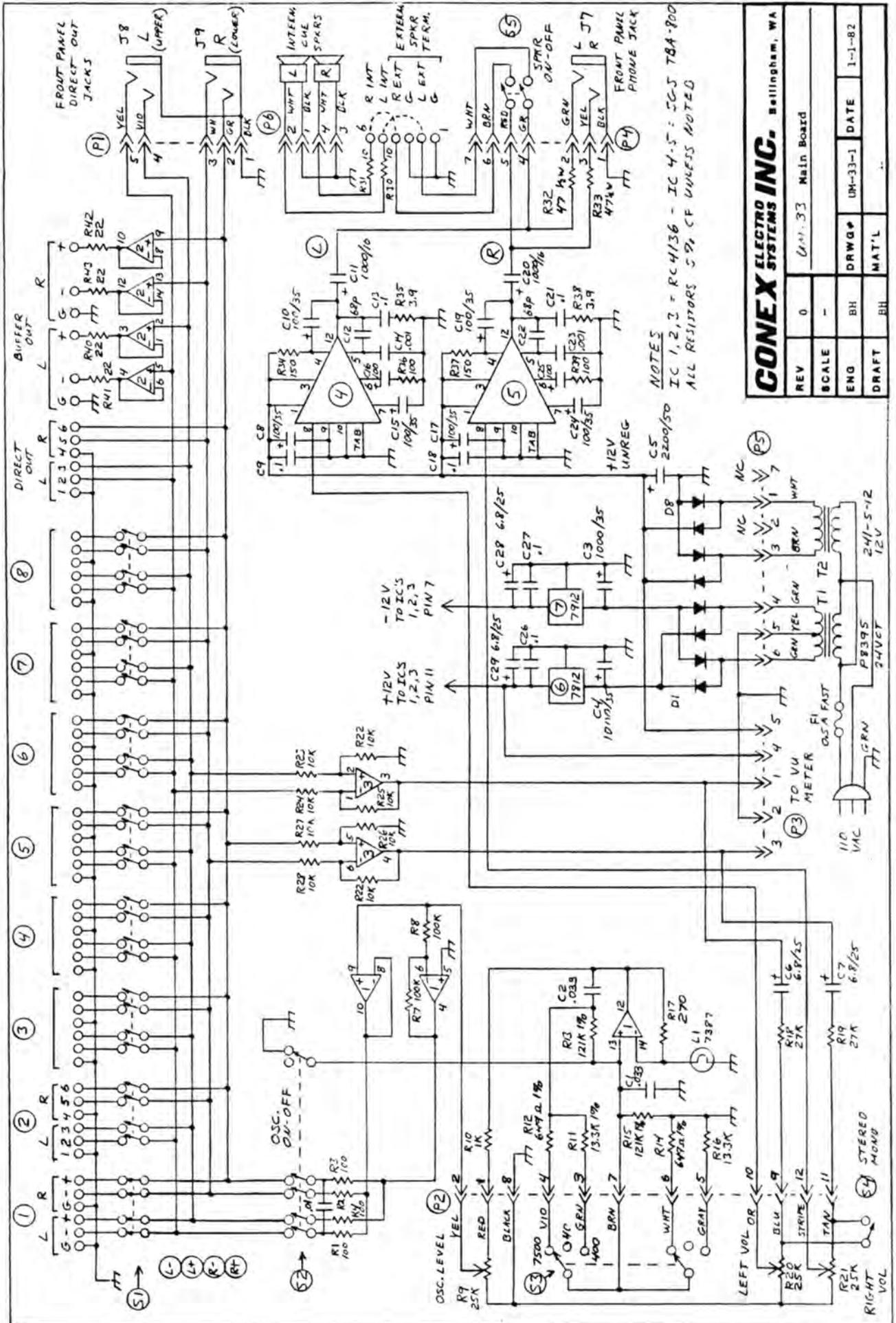
Note: The oscillator output is switched directly to the switched input bus. This means that the oscillator will feed the selected input as well as the output. This could be desirable in some applications, but for the most part, the inputs should be deselected while using the oscillator. To deselect all inputs, lightly press any non selected input until all buttons are released. See figure 2.

The speaker amplifier will drive external speakers (two watts per channel) by connecting them to the rear panel terminal strip. Use of the internal speakers requires jumpers on the panel speaker switch (#2, figure 1) leaving the amplifier connected only to the stereo headphone jack.

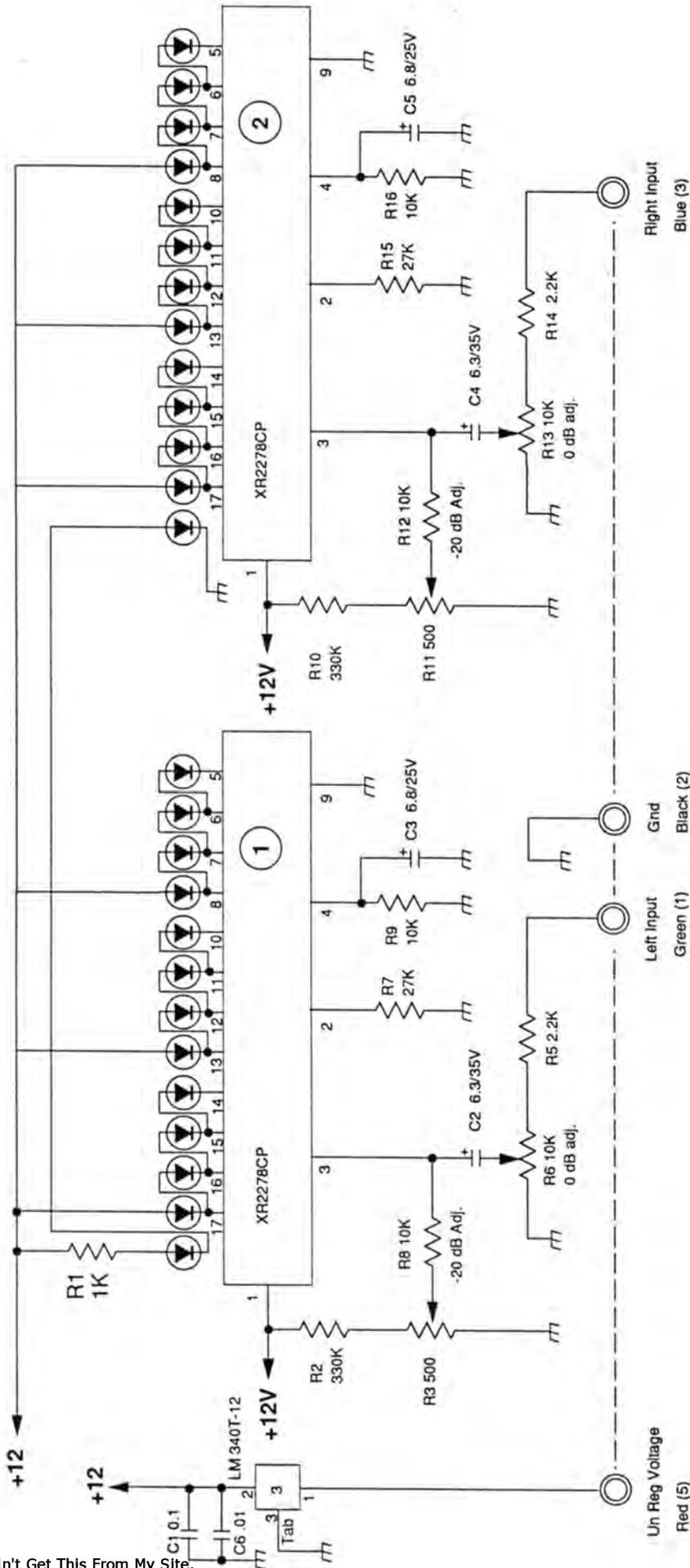
The stereo VU meters have front panel screwdriver adjustments that allow calibration over a full—scale range of -10 to +24 dB. (To allow for sufficient headroom, it is recommended that input signals in the range of -10 to +8 dB be used.



(FIGURE 2)



CONEX ELECTRO SYSTEMS INC. Bellingham, WA			
REV	0	DATE	6-11-83
SCALE	-	DRWG#	UM-33-1
ENG	BH	DATE	1-1-82
DRAFT	BH	MAT'L	



Conex Electro-Systems, Inc.			
REV	A	UM33 VU METER MOD	
SCALE		DATE	8/22/91
ENG	BH	DWG #	001-05-2
DRAFT	JP	MATL	

