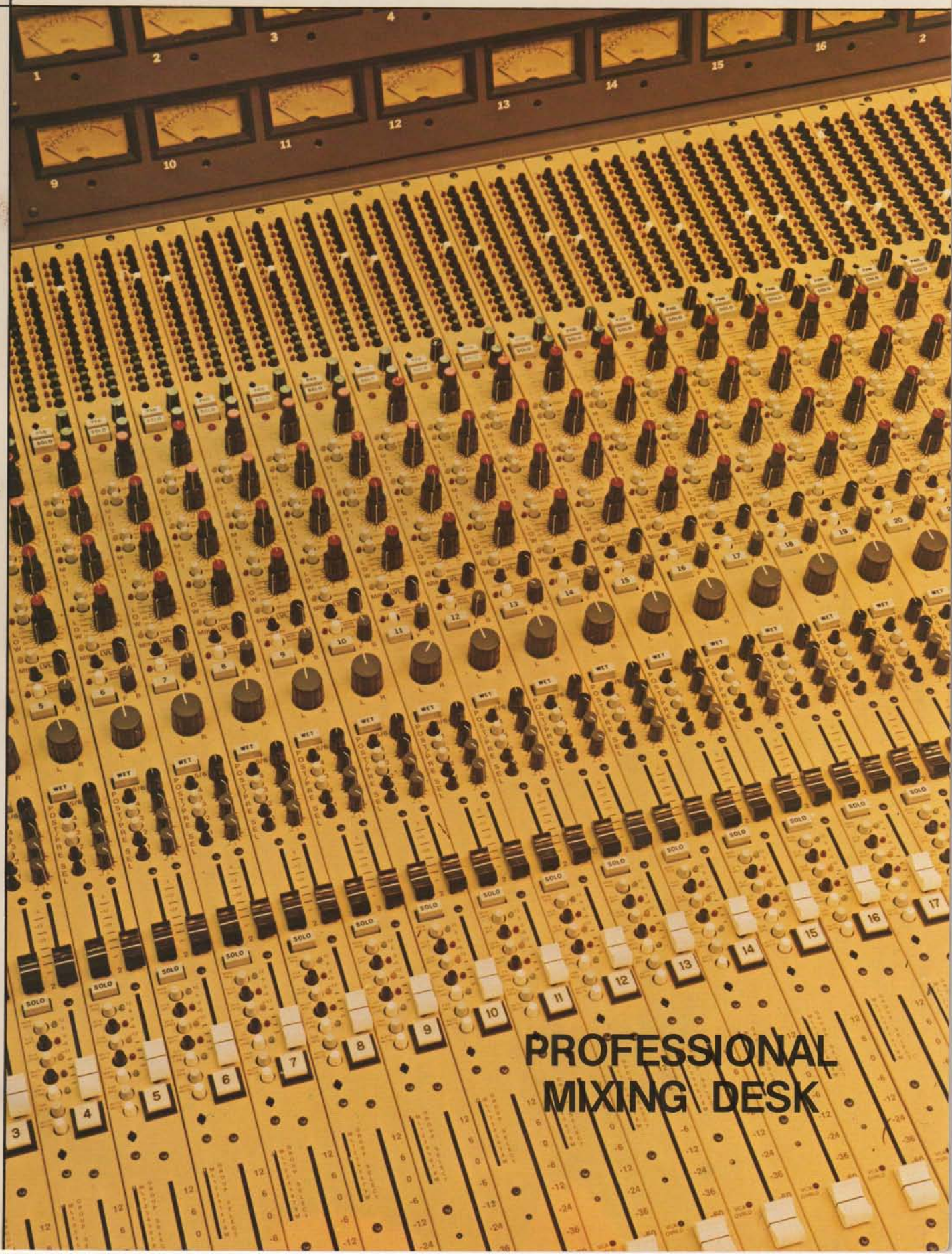
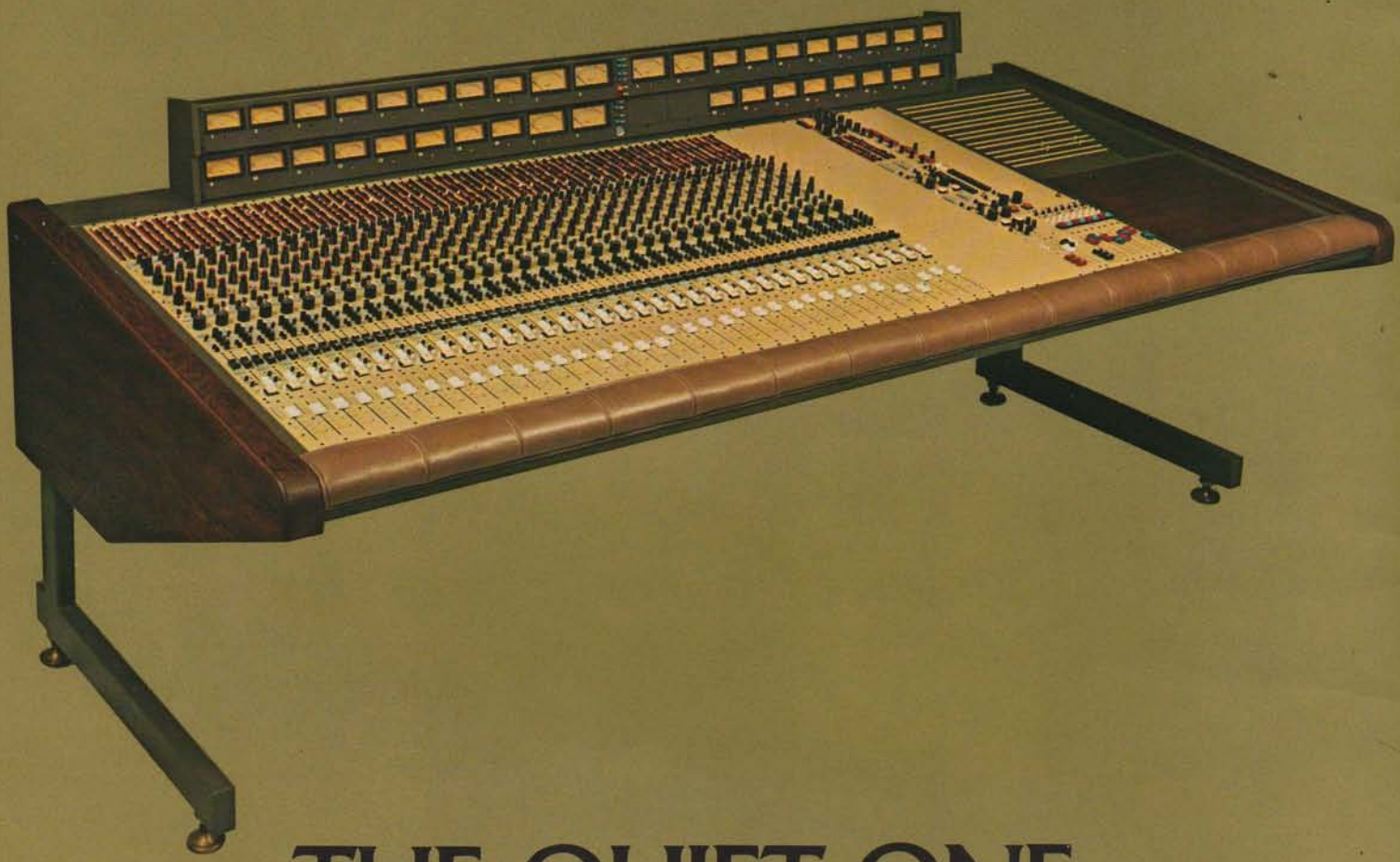
MCI JH-500 SERIES



PROFESSIONAL MIXING DESK



THE QUIET ONE IS AUTOMATION-READY

The JH-528 PROFESSIONAL AUDIO MIXING CONSOLE has been designed to be the most efficient and the most flexible console available. It is styled in an oil-finished solid oak with control panels in a natural sugar maple color. The large padded arm rest is covered with genuine English leather.

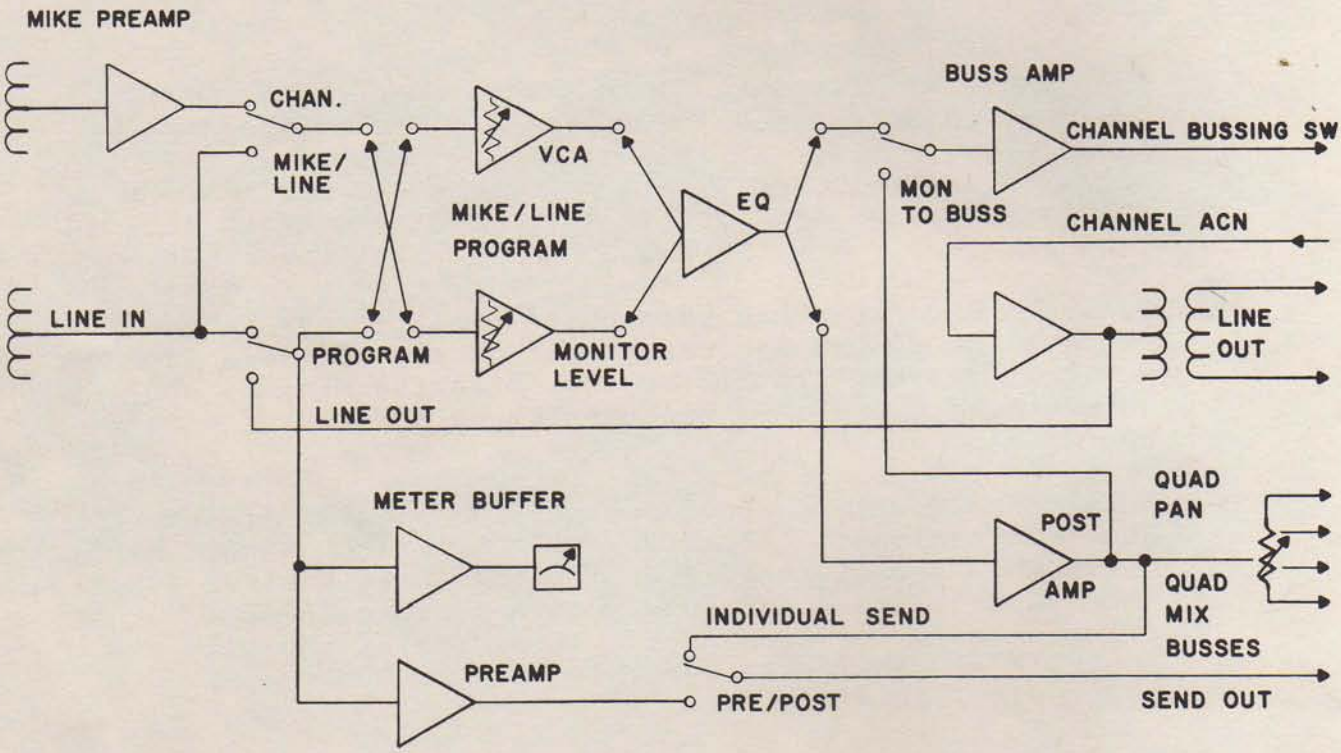
The entire console has been built small enough so that the average person can reach most of the controls without moving. Yet the profile is low, creating minimum control room acoustic problems and permitting a clear view into the studio.

This console was designed for maximum flexibility and for easy conversion to *AUTOMATED CONTROL*. Each channel has a VOLTAGE CONTROLLED AMPLIFIER for the level control function. The FADER uses a 4 inch conductive plastic element. This circuit is *AUTOMATION-READY*. In addition, the QUAD PAN controls and the level controls for two SEND BUSSES are *AUTOMATION-CAPABLE*.

Tell us what you would like to do in your studio, and the chances are that we will show you it can be accomplished with this console. The following pages show some of its capabilities.

INPUT/OUTPUT MODULES

A seperate INPUT/OUTPUT module is provided for each MIKE input or TAPE RETURN input. Each of these modules contain all of the circuitry, the switching, and the controls for the following functions:



Each MIKE INPUT is provided with 32 OUTPUT BUSS SELECTOR switches. Any mike can be assigned to ANY COMBINATION of OUTPUT CHANNELS.

A CHANNEL MIKE/LINE switch permits PING-PONGING tracks by connecting the Channel switching to LINE RETURN *(WITHOUT AFFECTING MONITORING CAPABILITY)*.

A PAN CONTROL for the ODD-EVEN BUSSES is provided.

An LED beside each Channel switch indicates Channel assignment(s).

EQUALIZATION

Four basic adjustment areas are provided which together provide for over *140 MILLION COMBINATIONS*. Discrete switching is used so that you can always return to any exact combination.

The EQ Filter frequencies are interrelated MUSICALLY *(1/2 octave ranges)* so that they relate directly to the music you are recording.

LOW FREQUENCY EQ

A Low Frequency Shelf can be switched to any of the following frequencies:

30 Hz	100 Hz	The adjustable gain for this circuit is ±10 dB in 2 dB discrete steps.
60 Hz	150 Hz	

HIGH FREQUENCY EQ

Either a High Frequency Shelf or a High Frequency Peaking circuit is provided *(Switchable)*. These circuits may be switched to any of the following frequencies:

8 kHz	12 kHz	The adjustable gain for this circuit is ±10 dB in 2 dB discrete steps.
10 kHz	16 kHz	

MID RANGE NUMBER 1 EQ

You may switch in a BOOST or a CUT circuit at any of the 1/2 octave frequencies between 150 Hz and 7.5 kHz:

150 Hz	600 Hz	2.5 kHz	The adjustable gain for this circuit is ±14 dB in 2 dB discrete steps.
200 Hz	900 Hz	3.5 kHz	
300 Hz	1.2 kHz	5.0 kHz	
400 Hz	1.8 kHz	7.5 kHz	

MID RANGE NUMBER 2 EQ

You may switch in a BOOST or a CUT circuit at any of the 1/2 octave frequencies between 180 Hz and 8.5 kHz:

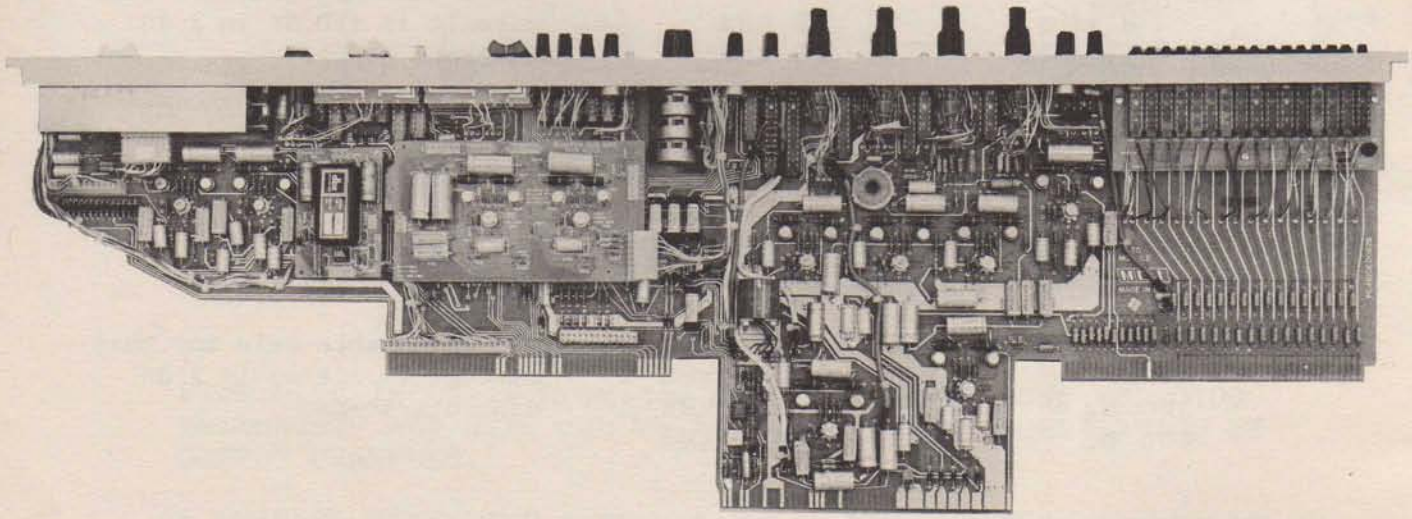
180 Hz	750 Hz	3.0 kHz	The adjustable gain for this circuit is ±14 dB in 2 dB discrete steps.
250 Hz	1.2 kHz	4.3 kHz	
350 Hz	1.5 kHz	6.0 kHz	
500 Hz	2.2 kHz	8.5 kHz	

EQ SWITCHING

An EQ IN/OUT switch is provided to permit bypassing all equalization if desired.

A movable PATCH POINT is provided to permit the compression or limiting to be connected either before or after EQ.

An EQ MONITOR/CHANNEL switch is provided to permit the EQ to be placed either in the MIKE circuit for equalizing the signal to the MASTER TAPE, or in the MONITOR circuit for equalizing the RETURN signal.



JH-500 SERIES I/O MODULE

LEVEL CONTROLS

There are two main LEVEL CONTROL circuits for each channel. One circuit is a conventional audio amplifier with a 45 mm. conductive plastic linear fader. This circuit is normally assigned to the MONITOR circuit. The second LEVEL CONTROL circuit is a VOLTAGE CONTROLLED AMPLIFIER which uses a linear 4 inch conductive plastic fader. This combination is normally assigned to the CHANNEL OUTPUT.

The MASTER PROGRAMMING for these level controls is provided by the FDR button located on the STUDIO MONITOR module. When this button is depressed, the program for these two controls on ALL channels is REVERSED. The VCA is switched to the MONITOR channel and the MONITOR LEVEL CONTROL circuit is switched to the CHANNEL OUTPUT.

An FDR REV button is provided on each INPUT/OUTPUT module to REVERSE THE PROGRAMMING *(for that module only)*.

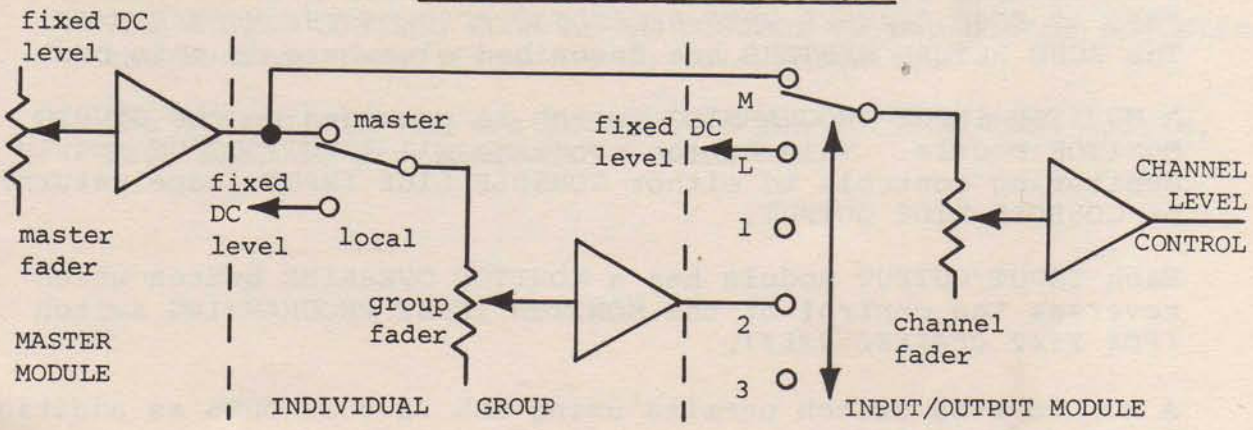
A GREEN LED beside the VCA FADER lights whenever the VCA circuit has been changed to the MONITOR circuit.

Level controls for the eight SUB GROUPS described in the MONITORING SYSTEM section are located as follows:

2 each in the 3 AUXILIARY modules
2 in the STUDIO MONITOR module.

LOCAL FADER SWITCHES associated with each of these SUB GROUP FADERS removes control of that SUB GROUP from the MASTER FADER *(located on the MASTER module)*. This allows as many as NINE MASTER FADERS to be created. Each SUB GROUP will have its own MASTER FADER, and the channels NOT assigned to a SUB GROUP or to the MASTER FADER will be controlled by their individual channel faders.

This block diagram shows the interconnections between the amplifiers which feed the control voltages to the VCAs.



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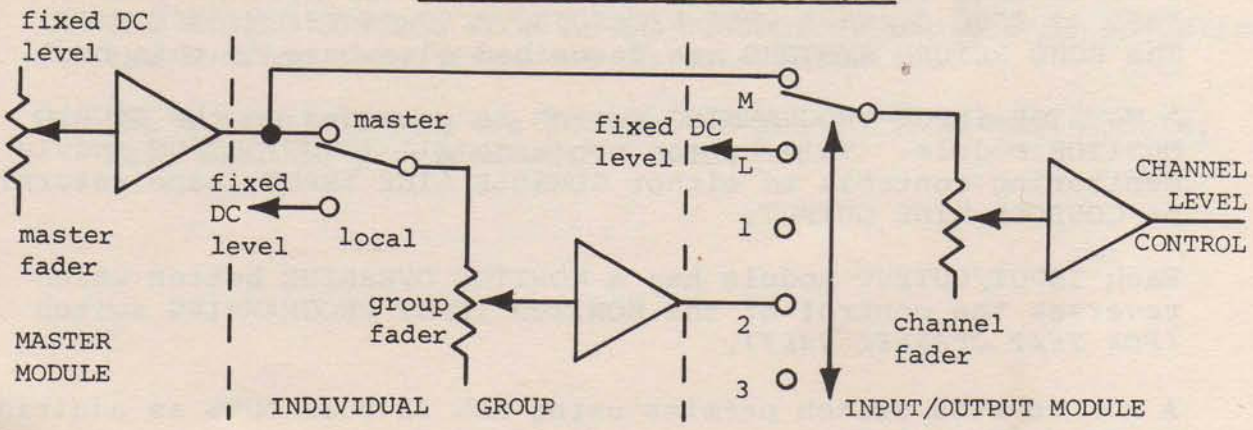


An LED is mounted close to each VCA FADER in the system. This LED lights if the control voltage is at a maximum. *THIS IS NOT A DISTORTION INDICATION. It merely indicates that the circuit is at maximum gain.*

MONITORING SYSTEM

Each INPUT/OUTPUT module has full QUAD PANNING capability. Two seperate potentiometers are provided, one for LEFT-RIGHT and one for FRONT-BACK. These controls are *AUTOMATION-CAPABLE.*

The MASTER module provides a + 10db gain control in 1 Db discrete steps for all QUAD and STEREO outputs. a potentiometer provides a trim for MONO output.

A CALIBRATE button is provided which overrides MONO trim, STEREO trims, and QUAD trims. This button returns the monitoring system to calibrated levels.

Each INPUT/OUTPUT module has 6 SEND LEVEL CONTROLS which feed 6 SEND BUSSES. These busses can be used for ECHO SENDS or for CUE SENDS.

Each of the 6 SEND BUSSES can be selected from a POST-FADER or a PRE-FADER point.

SENDS 1 and 2 are controlled by 45mm. conductive plastic linear faders and are *AUTOMATION-CAPABLE.*

SENDS 3 and 4 have individual level controls.

SENDS 5 and 6 are controlled by a single level control followed by a Pan Pot between the two busses.

A MASTER trim pot for each individual SEND is located on the CONTROL ROOM MONITOR module.

A"WET" switch changes the PRE-*(fader)* position of SENDS 3 and 4 to CHANNEL BUSS OUT position. *THIS IS THE ROUTING USED TO FEED AN ECHO CHAMBER WHEN RECORDING ECHO ON THE MASTER TAPE.* The ECHO RETURN SYSTEMS are described elsewhere in this book.

A MONITOR INPUT PROGRAMMING switch is provided on the STUDIO MONITOR module. This button programs all INPUT/OUTPUT module monitoring controls to either CONSOLE LINE INPUT (tape return) or CONSOLE LINE OUTPUT.

Each INPUT/OUTPUT module has a MONITOR OVERRIDE button which reverses the control of the MONITOR INPUT PROGRAMMING switch *(FOR THAT CHANNEL ONLY).*

A MON to BUSS switch permits using ALL 32 BUSS OUTS as additional sends during mixdown.

CONTROL ROOM MONITOR

SWITCHING

CONTROL MONITOR SELECTOR switches permit the monitoring of: Three 2-track tape machines, two 4-track tape machines, the 6 SEND BUSSES, the two stereo CUE systems, and the 2-mix, 4-mix systems. The QUAD CONTROL Meters will follow these selections automatically, but the metering level is NOT affected by the monitor level. When the MONO position is selected, the monitors are switched to a MONO output, but the meters will still follow the QUAD of the STEREO output.

4 individual MONITOR MUTE switches are provided. The rear monitors are automatically muted when a stereo input is selected. When changing between Quad and Stereo, an automatic level adjustment circuit keeps the level constant.

An ALTERNATE SPEAKER switch provides a command to switch to and alternate set of control room speakers.

An ALTERNATE CENTER switch permits shifting the "center of the room" from the CONSOLE to the PRODUCER's DESK. Internal pots are provided to set up this "alternate center" location. A warning lamp is turned ON when this button is depressed.

When either the SLATE, the TALKBACK, or the COMMUNICATION system is activated, control room monitor dimming is automatically provided.

LEVEL CONTROLS

Individual switches provide a + 5 Db trim in 1 Db discrete steps to each of the four CONTROL ROOM MONITORS.

A SOLO trim pot provides 20 Db of gain control when a MONO SOLO is being monitored.

The MASTER CONTROL ROOM LEVEL CONTROL is capable of adjusting the monitor level from + 6 Db to - infinity.

The 6 SEND OUTPUTS are located on the CONTROL ROOM module. Each SEND is provided with a trim pot.

STUDIO MONITOR

SWITCHING

STUDIO MONITOR SELECTOR switches permit the monitoring of: three 2-track tape machines, two 4-track tape machines, the 6 SEND BUSSES, the 2 Stereo CUE SYSTEMS, and the 2-mix, 4-mix outputs.
The STUDIO MONITOR normally monitors in STEREO, but buttons are provided on the STUDIO MONITOR module to select either MONO or QUAD.

A STUDIO MUTE switch is provided to insure positive monitor kill.

The MASTER STUDIO LEVEL CONTROL is capable of adjusting the monitor level from + 6 Db to - infinity.

CUEING SYSTEMS

Two STEREO CUEING SYSTEMS are provided. These systems may be fed from any of the following sources: The STEREO MIX busses, SENDS (1-2), (3-4), (5-6), The ECHO RETURN circuits, or an external Stereo signal through the patch panel.

ECHO RETURN SYSTEMS

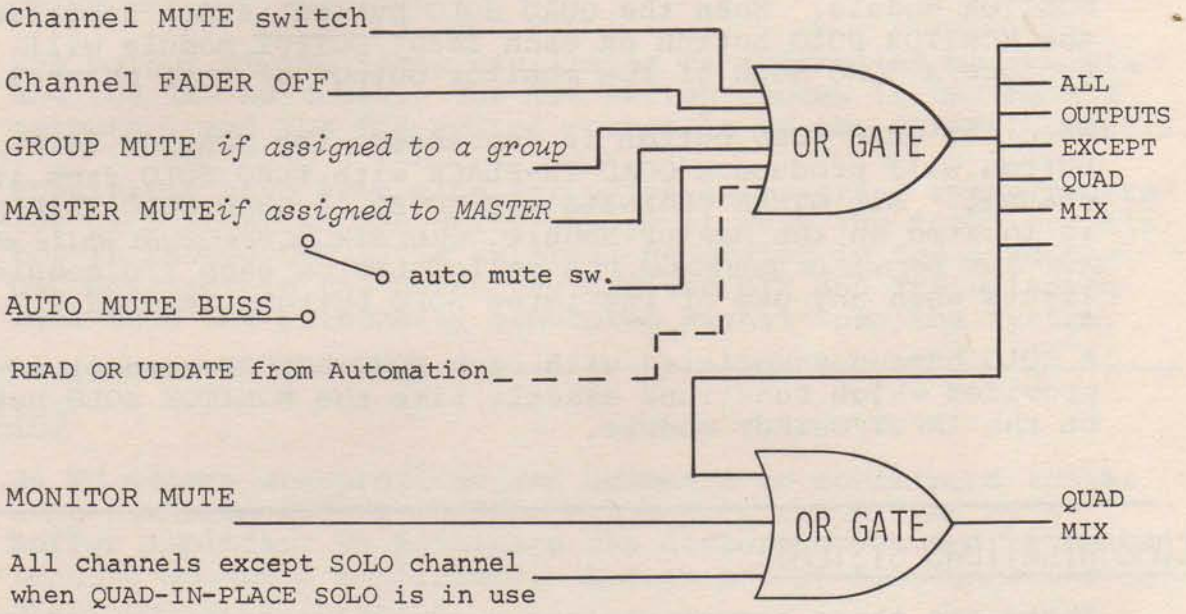
Four ECHO RETURN systems are provided, each with full QUAD PANNING. Two of these circuits are in the MASTER module and two are in the COMMUNICATIONS module. One of the circuits in each module can be switched into any combination of CHANNEL BUSSES. *(32 push buttons are provided)* All four of the systems are returned to the QUAD MIX BUSSES.

A PAN switch is provided for the two ECHO RETURN circuits which have switching capability. This switch allows panning between the ODD and the EVEN NUMBERED channels as a function of the LEFT-RIGHT PAN pot. FRONT-BACK panning will not affect the CHANNEL OUTPUT BUSSES.

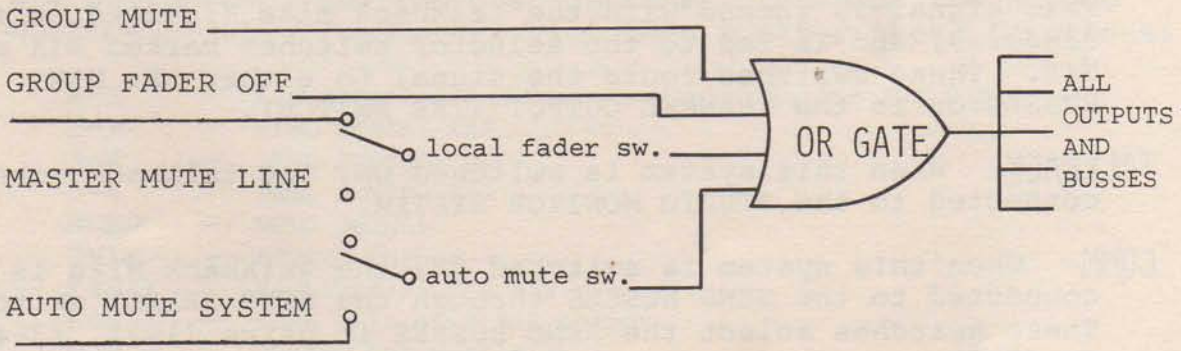
Two switches provided for each ECHO RETURN allow connection of that return circuit to CUE 1 and/or CUE 2 busses through the LEFT-RIGHT pan pot.
All ECHO RETURN levels may be assigned to the MASTER FADER or to a GROUP FADER through the SUB GROUP SELECTOR switches provided.

MUTING SYSTEMS

Muting of a single CHANNEL or of an ECHO RETURN channel may be accomplished in six different ways. Two additional methods are provided for muting the QUAD MIX. If ANY ONE of these systems is activated, the CHANNEL (or ECHO RETURN) will be MUTED. The OVERALL FUNCTION operates like two OR GATES as shown in the following sketch:



GROUP MUTING is accomplished in four different ways. The OVERALL FUNCTION operates like an OR GATE as shown in the following sketch:



SOLO SYSTEMS

Three SOLO buttons are provided on each INPUT/OUTPUT module the SOLO button located near the EQ controls provides a MONO SOLO of the INPUT to the EQ.

The SOLO button located near the CHANNEL BUSS assignment switches provide a MONO SOLO of the CHANNEL OUTPUT.

The SOLO button located near the MONITOR level control is programmed by the QUAD SOLO button on the CONTROL ROOM MONITOR module. When the QUAD SOLO button is not depressed, the MONITOR SOLO button on each INPUT/OUTPUT module will produce a MONO SOLO of the monitor output of that channel.

When the QUAD SOLO button is depressed, the MONITOR SOLO button will produce a QUAD-IN-PLACE with ECHO SOLO from its channel. ALL OTHER CHANNELS ARE MUTED. A QUAD SOLO TRIM pot. is located on the Master Module. *(QUAD MIX is destroyed while the QUAD SOLO button is depressed.)* A yellow LED on each I/O module lights when any one of the three SOLO buttons is used.

A SOLO button associated with each ECHO RETURN circuit is provided which functions exactly like the MONITOR SOLO button on the INPUT/OUTPUT module.

COMMUNICATIONS SYSTEMS

There are three communications systems located on the COMMUNICATIONS module. Each system has its own level control and its own OFF/ON switch. Control room monitors are automatically dimmed when either of these systems is turned ON.

SLATE- When this system is turned ON, the local oscillator is automatically switched ON and adjusted to 20Hz at -18 Db. This signal is summed with the talkback mike *(located in the console)*, and is fed to the selector switches marked MIX and TKS. These switches route the signal to either the MIX BUSSES or to the CHANNEL OUTPUT (TKS SWITCH).

TALKBACK- When this system is switched ON, the talkback mike is connected to the STUDIO MONITOR SYSTEM.

COMM- When this system is switched ON, the talkback Mike is connected to the SEND BUSSES through the SEND SELECT switches. These switches select the SEND BUSSES in pairs (1-2), (3-4), or (5-6).

When the COMM system is ON, the talkback mike is ALWAYS connected to both CUE systems.

LOCAL OSCILLATOR SYSTEM

The local oscillator is a self-leveling Weinbridge oscillator with a freq. range continuously variable from 20Hz to 20KHz. Depressing either the X10, the X100, or the X1000 button will turn the oscillator ON and set the range. The OSC FREQ knob varies the frequency through each range.

The OSC LEVEL controls the output from + 12 Db to - 50 Db.

The output of the local oscillator is always available at the patch bay OSC OUT jack.

The output of the local oscillator is controlled by the MIX and the TKS switches. The MIX switch routes it to the MIX outputs , and the TKS switch routes it to the CHANNEL OUTPUTS.

Provisions have been made for using an external sweep generator or distortion measuring equipment when the local oscillator is turned OFF. The external generator is fed into the OSC OUT jack in the patch bay and the MIX and TKS switches will feed the externally generated signal into the system.

METERING

24 VU meters are provided and numbered to correspond to the same numbered OUTPUT BUSSES. All meters are driven by a buffer amplifier to eliminate the distortion caused by meter loading on audio amplifiers. A trim pot is also included for exact meter calibration.

The four large central meters numbered 1, 2, 3, 4 always show the CONTROL ROOM MONITOR OUTPUT. The meters reflect the BUSS LEVEL ONLY, they are NOT controlled by MONITOR LEVEL CONTROLS.

The two large VU meters marked L & R in the central cluster are switched by the ten push buttons located on the STUDIO MONITOR module. The meters will then monitor these functions:

AUX	-	Any external function connected to the AUX input.
1-2	-	SEND BUSSES 1&2
3-4	-	SEND BUSSES 3&4
5-6	-	SEND BUSSES 5&6
MONO	-	MONO output
2MIX	-	STEREO output
F4MIX	-	FRONT pair of 4 MIX output
R4MIX	-	REAR pair of 4 MIX output
CUE 1	-	STEREO CUE system 1
CUE 2	-	STEREO CUE system 2

PATCH BAY

The Patch Bay is organized into 16 rows of 28 miniature telephone jacks. These are Normalized Pairs where applicable.

The following is a list of the jacks supplied in the standard Desk. The numbers in parentheses following the Title is the number of jacks supplied under that Title.

ROW	TITLE(S)	
1	PREAMP OUT *(28)*	
2	PREAMP RETURN *(28)*	
3	PRE/POST EQUALIZER IN *(28)*	*(Whether Pre EQ or Post EQ depends on position of switch on I/O Module.)*
4	PRE/POST EQUALIZER OUT *(28)*	*(Whether Pre EQ or Post EQ depends on position of switch on I/O Module.)*
5	CHANNEL LINE OUTPUT *(28)*	
6	TAPE MACHINE INPUT *(28)*	
7	TAPE MACHINE RETURN *(28)*	
8	CHANNEL LINE INPUT *(28)*	
9	QUAD MIX OUTPUT *(4)*, TAPE 1 IN *(2)*, TAPE 2 IN *(2)*, TAPE 3 IN *(2)*, TAPE 4 IN *(4)*, TAPE 5 IN *(4)*, CUE SENDS *(2pr)*, SENDS *(6)*.	
10	2 MIX OUT *(2)*, MONO OUT *(1)*, OSC *(1)*, TAPE 1 RET *(2)*, *TAPE* 2 RET *(2)*, TAPE 3 RET *(2)*, TAPE 4 RET *(4)*, TAPE 5 RET *(4)*, CUE AMP IN *(2pr)*, CHAMBER INPUT *(6)*.	
11	EQ *(4 IN, 4 OUT)*, RETURN INPUT *(8)*, CHAMBER RETURN *(6pr)*.	
12	MULT 1 *(4)*, TIE SWITCH, MULT 2 *(4)*, TIE SWITCH, MULT 3 *(4)*, TIE SWITCH, MULT 4 *(4)*, TIE SWITCH, MULT 5 *(4)*, *CUE INPUTS (2pr)*.	
13	TIE LINES *(28)*	
14	TIE LINES *(28)*	
15	TIE LINES *(28)*	
16	TIE LINES *(28)*	

CONSOLE INDICATOR LAMPS

The groups of indicator lamps located on the meter panel show the following general conditions and master functions:

The two lamps marked MIKE and MON show whether the VOLTAGE CONTROLLED AMPLIFIER (VCA) is switched into the MIKE mode or into the MONITOR mode. The master programming switch for this function is located on the STUDIO MONITOR module and is marked FDR.

The two lamps marked IN and OUT show whether the MONITORS are switched to the LINE INPUT of to the LINE OUTPUT. The MASTER PROGRAMMING switch for this function is located on the STUDIO MONITOR module and is marked MON.

The OVRLD light shows that one or more of the VCAs are at maximum gain.

The four lights with voltages marked beside them are monitoring the power supplied to the console. When lighted, they indicate that the supplies are in working order.

OPTIONS

LINE AMPLIFIERS

4 additional LINE AMPLIFIERS can be built into either of the Auxiliary modules. These amplifiers are similar to the Echo Return Amplifiers No. 3 &4.

EQ - AUX MODULE

This module is a replacement for the Auxiliary 1 module. It provides 4 Equalizers, each identical to the Equalizer built into an I/O module, with some additional features:

1. A switchable High Pass Filter. This is a 4th order, maximally flat, Butterworth High Pass Filter. Its low frequency response is down 3 dB at 30 Hz and progresses down at the rate of 24 dBv per octave *(80 dBv per decade)*.

2. A Phase switch. The output phase of each EQ circuit can be switched from zero to one hundred eighty degrees.

3. Each Equalizer is transformer coupled and is normalized to have unity gain.

The transformers which couple the Input and the Output of each of these Equalizers are located in the underbelly of the Desk. These 8 transformers have not been previously assigned.

SPECTRA-VUE

The JH-35 Spectra-Vue module uses the Light Meters *(or Vu meters)* on the JH-500 Series Audio Desk to produce a large, readable AUDIO SPECTRUM DISPLAY. It separates a MIX or a SOLO into eighteen 1/2 octave bands from 45 Hz to 16.5 kHz and displays each band on a separate meter. This Spectrum Analysis is made in "real time" - AS YOU HEAR the program on your monitor.

SPECIFICATIONS:

INPUTS are switch selectable from 8 sources. Simultaneous displays of any number of these inputs is possible:

1. The 4 Quad Busses.
2. The 2 Stereo Busses.
3. 2 Auxiliary sources. *(Routed through Patch Points)*.

In addition to the above INPUTS, SOLO SELECT switches are provided so that any SOLO available from the Desk may be monitored in three ways:

1. Visually only.
2. Both Audio and Visual.
3. Audio only.

A visual AGC *(Automatic Gain Control)* switch is provided to monitor the VISUAL DISPLAY LEVEL. Audio level is NOT affected.

INPUT IMPEDANCE is 10k ohms - unbalanced.

Meter signals from the JH-500 Series Audio Desk are routed through the Spectra-Vue module so that a relay can switch a meter to the output of each Filter circuit when the Analyzer is in use.

CENTERBAND FREQUENCIES of the eighteen Filter circuits are:

45 Hz	400 Hz	3.2 kHz
70 Hz	560 Hz	4.5 kHz
100 Hz	800 Hz	6.3 kHz
140 Hz	1.1 kHz	9.0 kHz
200 Hz	1.6 kHz	12.8 kHz
280 Hz	2.2 kHz	16.5 kHz

The Spectra-Vue option is completely compatible with the JH-500 Series Audio Desk. It is built into the Auxiliary module without altering the functions of the module, and it receives all of its power from the standard Desk Power Supply.

AUTOMATION BY MCI

The MCI automation system for the JH-500 Series Audio Mixing Desk will be released by late 1976. The circuitry and the controls needed for full automation are built into the standard Desk. Advanced design, coupled with the extreme flexibility of this Desk allows the WRITE and UPDATE controls to be reduced to just three simple pushbuttons per Channel for ALL FIVE AUTOMATED FUNCTIONS.

When CHANNEL GROUPING is used, three buttons can control the whole group. These buttons are already built into the modules and are labeled VCA WRITE, VCA UPDATE, and MUTE WRITE. The buttons are momentary pushbuttons with latching circuits. An LED located beside each button lights whenever the circuit is active.

Two other features of this AUTOMATION SYSTEM contribute greatly to ease of use:

1. A design breakthrough has achieved AUTOMATIC NULLING of all automated controls. This is accomplished electronically and results in an additional feature:

   When VCA WRITE or VCA UPDATE is activated, The mechanical position of the Fader is taken as ZERO, or NULL POINT. *(Whatever that position may be)*. When Updating, changes are read as differences from the assigned ZERO POSITION.

   Therefore the Faders can be used in the UPPER *(and more sensitive)* portion of their range when Updating - REGARDLESS OF THE LEVEL BEING UPDATED.

2. When the UPDATE or WRITE function has been completed, you may return the Fader ROUGHLY to the vicinity where the NULL WAS ESTABLISHED *(Normally around 0 dB)*. An EXPONENTIAL RAMP built into the NULLING circuit will AUTOMATICALLY RAMP OUT any difference of setting.

   NO SUDDEN LEVEL CHANGE WILL OCCUR.

MUTE WRITE is treated as a separate function, and may be easily added either before or after writing the VCA program.

NOTE: The MUTE FUNCTION in the MCI Desk is NOT the usual reduction of VCA gain to minimum, but is accomplished by shorting the output to ground through relay contacts.

THIS ASSURES A TRUE CUT OFF OF CIRCUIT NOISE AS WELL AS PROGRAM MATERIAL.

THE VOLTAGE CONTROLLED AMPLIFIER (VCA) AUTOMATION HAS FOUR MODES:

WRITE This is accomplished by pushing the VCA button and going through the recording with the controls set as you wish them to be.

PLAYBACK None of the desk buttons are used. Going through the recording with the automation activated will cause the controls to faithfully follow whatever you have written into the program.

UPDATE This function is essentially a playback with CONTROLS ACTIVATED. NO REWRITING OF THE PROGRAM occurs in this mode. If you wish to test a different combination of control settings, use this mode. The originally programmed control settings will be reproduced. YOU CAN ADD or SUBTRACT from any programmed control setting merely by moving that control.

REWRITE If you decide that you like the new settings, you may THEN rewrite the program. Pressing BOTH the VCA UPDATE and the VCA WRITE buttons will read back the original program, update it, and write it into memory.


FLEXIBILITY
ONLY MCI
CAN GIVE
YOU

SPECIFICATIONS

MIKE PREAMP

Input impedance		*Without pad*	300 ohms
		With pad	1.2k ohms
Output impedance			2 ohms
Nominal output			-6 dBm
Maximum output	*1 kHz @ 0.5% THD - into 600 ohms*		+28 dBm
Distortion	*0 dB input, +28 dB output to 600 ohms (50 Hz)*		.03% THD
	IM measurements with 60 Hz & 6000 Hz at a 4:1 ratio:		
	-40 dB input, 0 dB output		.005% IM
	0 dB input, +28 dB output		.03% IM
Equivalent noise		*44 dB gain*	-128 dBm

CHANNEL CIRCUIT *(TO MASTER TAPE)*

Signal to noise		*Better than*	75 dB
Input impedance to Fader			4k ohms
Output impedance of Channel output			100 ohms
Nominal output			+4 dBm
Maximum output	*Into 600 ohms @ 0.5% THD (1 kHz signal)*		+27 dBm
Distortion		*@ Nominal output*	.07% IM Max.
Distortion		*@ +24 dBm output*	.09% IM Max.
Separation	*Between adjacent channels assigned to adjacent Busses (1 kHz)*		90 dB
	Mike input to Line output (15 kHz)		72 dB
Internal Head Room of Equalizer		*Above +4 dB*	25 dB

MONITOR CIRCUIT *(MIXDOWN)*

Input impedance to Fader			4k ohms
Nominal output			+4 dBm
Signal to noise		*Better than*	85 dBm
Distortion		*@ Nominal output*	.06% IM Max.
		@ +24 dBm output	.08% IM Max.
Maximum output	*Into 600 ohms @ 0.5% THD (1 kHz signal)*		+27 dBm
Separation of QUAD MIX Busses		*1 kHz*	85 dB
		15 kHz	70 dB
Maximum Fader attenuation	*(FDR KILL)*	*Better than*	80 dB

PATCH PANEL

528	*Up to*	504 Jacks
542	*Up to*	756 Jacks

LIGHT METER OPTION

Range *(SCALE)*		Switchable from VU to Peak
VU	*log scale*	+3 dB to -20 dB
Peak	*linear scale*	+10 dB to -40 dB
Integration time		
VU ballistics		per ASA Standards
Peak ballistics	*Rise time*	10 ms to Full Scale
	Fall time (adjustable)	from 1 sec. to 7.55 sec. FS
Frequency response		20 Hz - 20 kHz ±1/2 dB
Input impedance	*Resistive - unbalanced*	10k ohms
Overshoot	*Less than*	.1 dB
Display	*Length*	127 mm (5 inches)
	Width	2.54 mm (.1 inches)
Number of segments		100 per display
Controls		

1. Individual Peak Accumulate ON/OFF switch for each meter.
2. Master Peak Accumulate ON/OFF switch for all meters.
3. VU/Peak Select (single switch contained on Master card.)

MCI

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