

RAMSA

RECORDING
MIXING CONSOLE
WR-8816

Operating Instructions

Panasonic

Before operating this set, please read these instructions completely.

GENERAL INFORMATION

The Ramsa story began several years ago when Panasonic elected to start a new division. It was geared towards the working professional. This means that we are truly interested in the needs of the user. We also chose to market a full line of equipment, with all the advantages inherent in a system approach, developed by our extensive research facilities.

Primarily though, we wanted to provide functional equipment, designed for the most versatile and convenient operation, while providing tremendous value. Given this strategy, the most effective way to proceed is to include the features which users find most valuable. And the best way to determine what these features are to talk to the people in the field — the users and their dealers.

So our engineer in charge of product development personally visited professional users to find the information we needed. He brought plans with him, blueprints of mixers which we intended to produce, and he asked for specific comments and suggestions. He returned with the dealers' and users' ideas for building the most functional mixers representing the best value for the money.

Then, we put our research and development team to work on executing the collective ideas of the American users. What were some of the suggestions? Modular design for reliability and ease of service. A sophisticated, versatile set of EQ controls. A fast, effective, visible metering system. Compact size, with a separate, external power supply. And Ramsa mixers are designed for their specific tasks — a recording board for recording engineers and a sound reinforcement console for performances.

At this point, we had all the technical information we needed. All that remained was to actually build the mixers. Creative engineering produced 3 new mixers; each includes the most appropriate features for its application. And each becomes the standard of the marketplace. Because we listened to you.

Of course, this is not the easiest way to develop new products. But we weren't looking for an easy way to add just another mixer to the marketplace. We wanted to build a contemporary line of mixers with unique features and outstanding value. We feel we've been very successful. And we have you, our dealers and users, to thank, The Mixer for the New Recording Technology.

FEATURES

1) Flexible Operation for Varied Applications

1) In addition to 16 electronically balanced mic inputs, the Input modules also accommodate 16 LINE IN inputs. There are also 16 direct line outputs. The MIC IN signals may be sent to a 16-track tape recorder, then fed back into the 16 LINE IN inputs. Thus, the input signals may be mixed using the tape monitor controls in the Group modules with no changes in the wiring arrangements. This simultaneous recording and mixing capability is a tremendous time-saver.

The Send controls in the Group modules enable signals to be routed directly from the LINE IN inputs to the L and R cue Send busses in the Master module. This allows independent control room monitoring and headphone cue Send mixed to be performed simultaneously.

2) Using the monitor section (even for overdubbing previously recorded material), the mix inputs may be employed without altering the path connections, so recordings can be made while monitoring the actual input signals. Since there's no need to alter input connections, the amount of time spent in the studio is minimized. The L and R channel assign capability bypasses the Group modules, so mixdown can be performed without unnecessary grouping. And because the WR-8816 has the capability for monitoring, all tracks going into the tape recorder can be visually and audibly monitored.

3) With a total of 10 mixing buss lines (4 Group, 2 Master, 2 Send, and 2 Echo), all necessary outputs are provided.

For additional flexibility, Ramsa has provided 16 insertion jacks on the Input modules. This provides ample capacity for connecting external equipment. In addition, 4 return jacks are provided to connect a second mixing console, or to return effects to the Group modules.

4) The user can exercise extremely precise control over each Input module, separately adjustable 3-band equalizer controls, echo controls, left and right and controls, and input faders are all included in each module. This ensures proper balance during the various stages of the recording process.

2. Versatile Monitoring

Complete access to all 16 inputs via direct monitoring lines permits simultaneous monitoring without altering patch cord connections. The WR-8816 also allows monitoring of up to 16 channels on a multi-track tape machine while recording is actually in progress.

With the Solo switch, the post-fader signal may be monitored individually at each Input module. The Send facility provides a pre-fader, pre-EQ signal for musician headphone monitoring. Playback monitoring is therefore available to both the musicians and the control room, and control room headphone monitoring is also available. During overdubbing of the music tracks, the Mic signals may also be monitored without the need for any wiring changes.

3. Precise Equalizer Controls

Three individual equalizer controls are provided for each Input, with High, Mid, and Low frequency adjustments giving precise control at each of these critical points in the sound spectrum. The High and Low controls are 3-position switches with shelving-type characteristics. Mid provides a continuously variable peak-dip arrangement for more precise tonal adjustment.

4. Highly Reliable Design

Made of conductive plastic for reliability and a professional feel, the 22 fader controls on the Input, Group, and Master modules are designed for quick, positive, precise adjustment of the volume settings. The long, 100 mm stroke facilitates exact positioning of the desired level.

The WR-8816 includes refinements such as extensive use of ICs and transistors — this serves to reduce or eliminate many servicing problems. The rear panel connectors — unlike the more conventional soldered connectors found on many mixers — are wire-wound with strong lapping coils (such as utilized on computers and test instruments) for excellent reliability.

The modular design makes it easy to pinpoint any malfunction which may occur, and allows emergency replacements to be made in minutes.

5. Outstanding Performance

The use of balanced input circuitry contributes to the low noise and superb frequency response exhibited by the WR-8816:

Mic	20—20,000 Hz ± 1 dB (+4dB Output level, 64dB Gain)
Line	20—20,000 Hz ± 0.5 dB (+4dB Output level, 24dB Gain)
Mic Input Noise	-128 dB (IHF "A" WTD, 150 Ohm source)
THD	Less than 0.07% (20—20,000 Hz) Less than 0.05% (50—15,000 Hz)
Maximum Output Level	+22dB
CMRR	Above 70 dB (1 kHz)

6. Convenient Operation

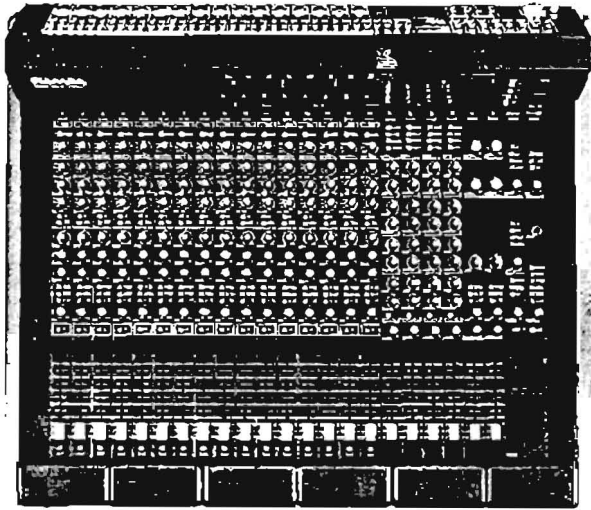
The WR-8816 also includes several features designed to make it easy and efficient to use. Among them:

- 1) Compact size: the WR-8816 is extremely easy to transport and set up — it is designed to work off an external power supply, which limits the weight of the entire console to 102 lbs.
- 2) Color-keyed knobs: the controls are colored to reflect their functions — related controls are the same color.
- 3) Low profile: the control panel is angled to provide the operator with an unobstructed view of the studio area.
- 4) Cushioned edge: the edge of the console is cushioned for user comfort.

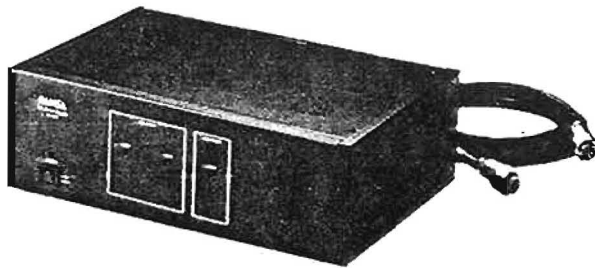
7. Economical Design

Keeping in mind the external factors which can drive up operational costs, Ramsa has included the types of features which can reduce time wasted in the studio. Monitoring and recording can be accomplished simultaneously, for fast, efficient recording.

**MIXING CONSOLE
WR-8816**

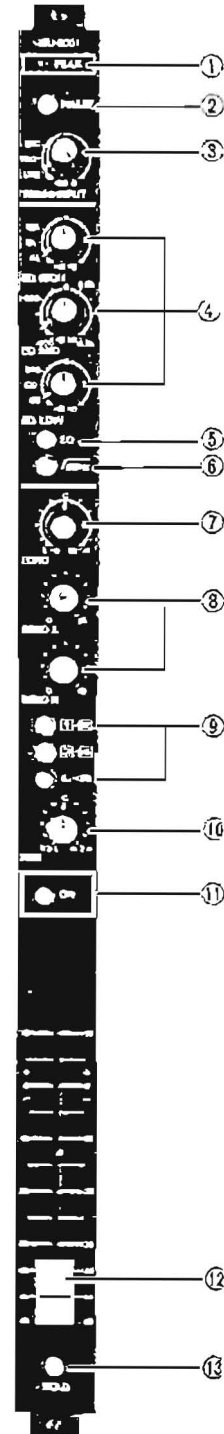


**POWER SUPPLY
WU-8081**



**INPUT MODULE
WU-8001**

In addition to 16 microphone inputs, the input modules on the WR-8816 can also accommodate 16 line inputs – a total of 32 inputs – plus 16 direct line outputs. This means that multi-track recording or overdubbing may be performed without time consuming changes in patch connections. The additional Left, Right channel assignment capability permits inputs signals to bypass the Group modules for direct 2-track mixdown or monitoring. Each module is equipped with its own equalizer, echo, and volume controls for flexible adjustments at the input stage.



1. Peak LED

The peak LED indicates that 6dB of headroom remains in the pre-amp section. By adjusting the input/trim control as high as it can go before the LED flashes during peaks, you can obtain the optimum S/N ratio, while retaining low distortion. The LED's indication applies to pre-EQ, pre-fader signals.

2. Phase Switch

This switch allows instant phase reversal of the microphone connected at each input. If an out-of-phase condition exists (a possibility if two microphones are miking the same instrument, or if the cables are connected in reverse), this convenient switch can return the mic to normal phase. This is an enormous time-saver, especially when compared to re-soldering the mic cables (required by some mixers to reverse the phase).

3. Input/Trim

To keep input signals below the clipping level of the pre-amp input sensitivity level can be set as high as -60dB, in three increments of -20dB each. Since the trim takes effect before the insertion jack, it allows adjustment to the optimum level for connecting external equipment.

4. Equalizer

These controls offer the engineer maximum flexibility in total adjustment—a sophisticated 3-band variable frequency equalizer section is included. The center knob controls the level adjustment and includes a 0dB center detent. The outer knob adjusts the frequency.

These rotary pots provide the input signals with three bands of EQ adjustment:

HIGH	4kHz, 8kHz, 12kHz	±12dB
MID	400Hz - 6.3kHz	±12dB
LOW	60Hz, 120Hz, 240Hz	±12dB

For the midrange control, a continuously variable rotary knob permits precise frequency adjustment, covering about one octave around the center frequency. The Low and High EQ settings are 3-position shelving-type controls.

5. Equalizer On Switch

Using this switch, you can turn the equalizer on or off without resetting the level adjustment positions.

6. High Pass Filter Switch

In comparison with the lowest EQ setting (a maximum attenuation of -12dB at 60Hz), this filter provides a sharper -18dB/octave cutoff at 80Hz. This is useful for eliminating low frequency vibrations (which may occur when using hand held mics) or to provide greater microphone isolation.

7. Echo Control

The echo controls utilize a novel, highly practical approach. Rather than a cumbersome system involving two separate echo level controls, a single level control with a concentric pan pot is provided. This arrangement makes it simple to position the echo signal, so that it precisely follows the position of the instrument or vocalists, when using a stereo echo or effects unit. If mono effects devices are used instead, the pan pot may be rotated either left or right, which assigns it to one of the two Master Post-EQ, post-fader, so the echo level will ride up maintaining the same chosen percentage of echo signal.

8. Send L,R Control

This control adjusts the amount of pre-fader, pre-EQ signal sent to the musician's headphones, via the Master Cue Send controls. Either one stereo, or two mono, cue signals may be sent to the headphones.

9. Program Buss Assign Switch

The pan control, used in conjunction with the program buss assign switch, adjusts the amount of input signal sent to any of the left assigns channels 1, 3, L and turning to the right assigns channels 2, 4, R. In the center position the input signal will be sent to all assigned channels. During the mix-down, the pan is an effective tool for operating a stereo sound field.

10. Pan Control

The pan control, used in conjunction with the program buss assign switch, adjusts the amount of input signal sent to any of the assigned channels. Turning the pan control to the left assigns channels 1, 3, L and turning to the right assigns channels 2, 4, R in the center position the input signal will be sent all assigned channels.

11. Channel On Switch

When this switch is engaged, the input signal is sent to any of the assigned output channels. When it is switched out, the signal to the Group and output busses is muted, the direct out signal is disconnected as well. Mic leakage or noise caused by a mic not in use will thus be eliminated.

GROUP MODULE WU-8002

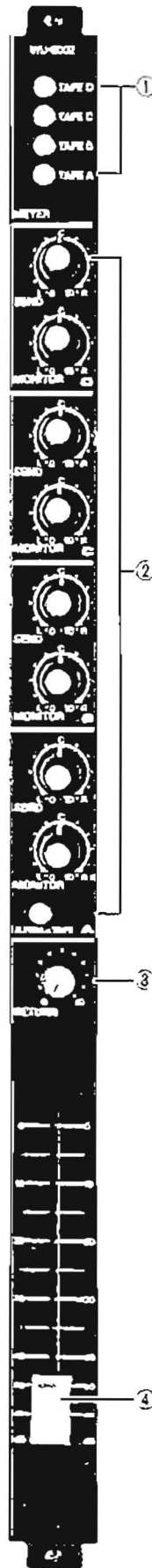
12. Input Fader

These plastic conductive, professional input fader controls permit independent adjustment of the volume level for each Input module. The extra-long 100 mm stroke assures precise level settings reference dB levels are also indicated.

13. Solo Switch

This switch is used to monitor the post-fader signal at each Input module individually. Since it can be locked in the "on" position, simultaneous monitoring with other modules can be performed. Activation of the Solo button is indicated by the solo-on LED.

The solo setting has priority over other monitoring modes, so even if the L and R Master volume must be attenuated, the input levels may still be monitored. In addition to headphone monitoring, the L and R control room outputs connected to separate monitor speaker will also provide a mono solo signal. This is especially useful for conducting final checks prior to actual takes.



The signals can be monitored at 16 points and grouping adjustments made to set the optimum balance. Then the mixed signals are routed to the Master module's L and R busses. If certain input signals require no grouping, they may be assigned directly to the Master module. This permits the 4 Group modules to be used for grouping applications, exclusively.

1. Meter Select Switch

These lock-release type switches determine which of the 4 tape signals will be displayed on each of the 4 peak level meters (Group output may be monitored at the Tape A position). This arrangement allows you to monitor up to 16 channels. By using the tape recorder's tape/source switch, the meter will read either the live or the tape signal level.

2. Tape Monitor

The line output from a multi-track recorder may be connected to the LINE IN jacks at the input modules. These, in turn, are connected to the tape monitor section of the Group modules. Each tape monitor incorporates separate Monitor and cue Send level controls. With 4 monitor on each Group module, the 4 Group modules are equipped to monitor line inputs from channels 1 to 16, respectively.

* The outer knob of the monitor control adjust the left and right positioning of the tape signal to the Master module. The inner knob adjusts this output's level. This gives the control room and the studio full monitoring capability of all 16 channels during multi-track recording. Also, the outer knob of the Send control adjusts the left and right positioning of the tape signal to the master cue send controls. The inner knob adjusts the level. This gives the musician full monitoring capability, independent of the control room's mix.

* The recording engineer can mix down any of the tape tracks onto a stereo master tape, without passing through the input modules. This is

MASTER MODULE WU-8003

useful when EQ or effects sends are not required, and will eliminate unnecessary electronics.

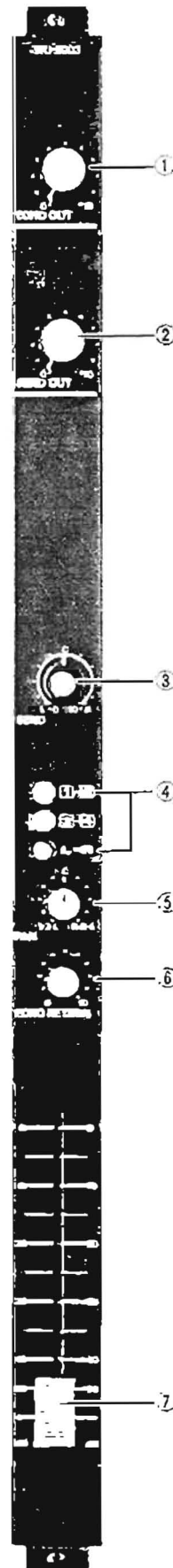
* The Monitor section of inputs 1-4 can also be switched to monitor the program signals routed through the Group modules. This permits monitoring during mixing of previously recorded tape tracks with live program signals.

3. Return

This controls the level of the signals returned to the Group modules.

4. Group Fader

These control the level for the respective group program signals.



These modules provide total control facilities for the various signals from the Input and Group modules, echo units, and other sound processors. Because the Master module can fade out all signals, the settings made on the Input and Group faders may be retained.

1. Master Echo Controls

These control the Master level of the signals sent to the echo unit

2. Master Send Controls

These provide Master level control of the headphone cue signals, which are sent from the input module or tape monitor section. This feature can be used for headphone monitoring by the performers in the studio.

3. Send Control

This assigns the echo return signals to the left and right Send mixing busses where the echo can be added to the musician's Send signals. The outer knob is a pan control, while the inner knob is for level adjustments.

4. Echo Return Assign Switch

This switch assigns the signals returned from the echo unit to the program buss which you select.

5. Pan Pot

This pan-pot assigns the echo return signals to your selected program for mixing.

6. Echo Return

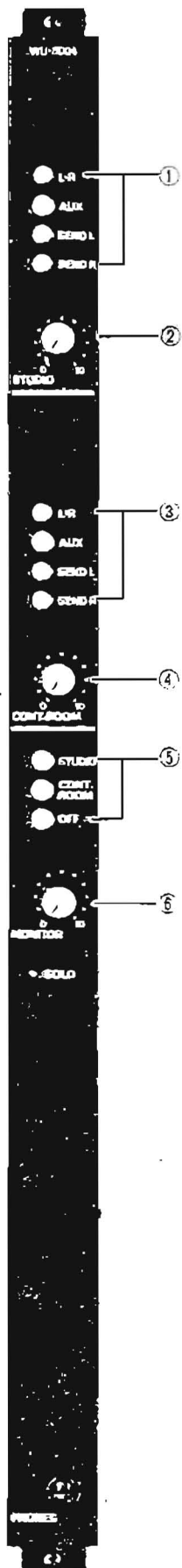
This control adjusts the level of the echo return inputs.

7. Master Fader

This controls the volume of the left and right Master output.

Use the attached Micky Knob for the gang control of L and R channels.

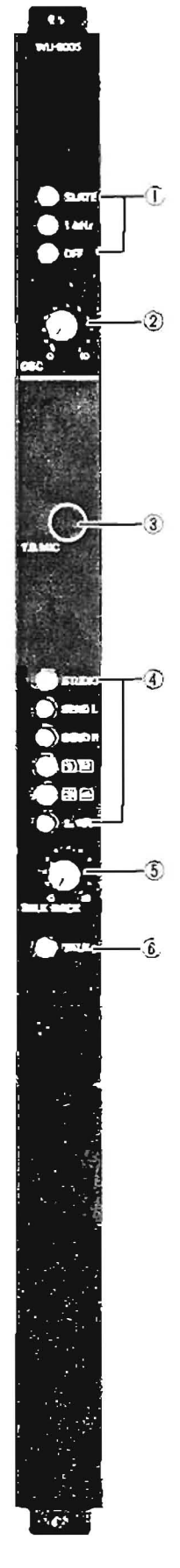
MONITOR MODULE WU-8004



In response to demands for truly flexible monitoring capability, Ramisa has included facilities in the WR-8816 which allow checks at all stages of the mixer output, both in the studio and the control room.

1. **Studio Select Switch**
This switch selects one of the 4 modes available for studio output monitoring. The L, R position allows the performers to monitor the stereo mixdown signals. AUX permits stereo monitoring of the signal from the tape deck connected to the AUX input terminals. The Send output L and R switches allow mono monitoring of the separate left and right signals.
2. **Studio Control**
This controls the output level for the studio select switch settings listed above.
3. **Control Room Select Switches**
The various outputs may be selected for monitoring in the control room by means of these switches. Listening mode is indicated in parentheses.
L, R: Master L, R (stereo)
AUX: AUX input (stereo)
Send L: Send L (mono)
Send R: Send R (mono)
4. **Control Room Volume Control**
This sets the output level for control room listening.
5. **Phones Select Switches**
You can select headphone monitoring for either the studio or the control room with these switches. When neither headphone monitor is in use, this control should be switched off.
6. **Monitor Control**
This control adjusts the listening levels for stereo headphone monitoring.
7. **Solo Indicator**
This readout indicates that the input solo switch is in the ON position.
8. **Headphone Jack**
Standard 1/4" (6.3 mm) jack for stereo headphone.

TB/OSC MODULE WU-8005

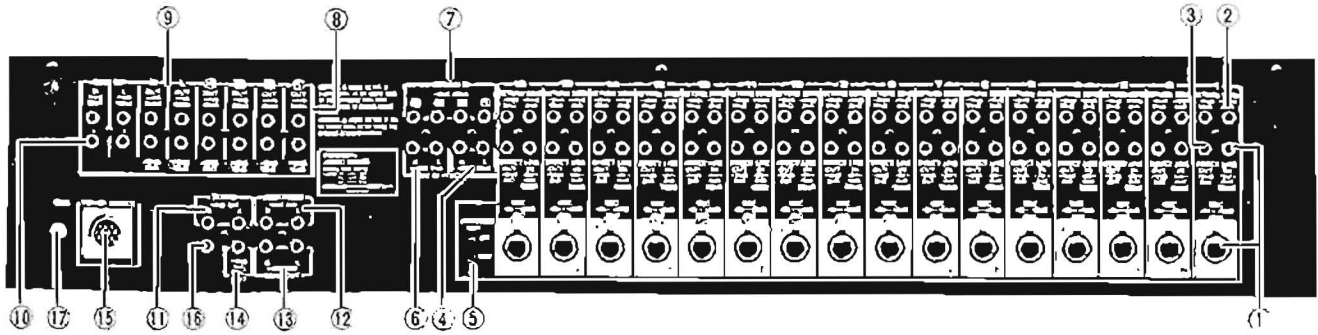


For close communication between the mixing operator and the studio musicians, the TB/OSC module features a convenient provision for two-way talkback.

Built-in oscillator facilities make it easy to confirm that the controls are set properly prior to actual recording of the program.

1. **OSC Select Switch**
With this switch, the operator can choose either a 40 Hz/slate tone or 1 kHz sine wave. When the OSC select switch is in the OFF position, the talkback facility may be activated.
2. **Oscillator Output Level Control**
3. **Talkback Microphone**
Built-in condenser microphone.
4. **TB/OSC Assign Switch**
— Studio
— Send L
— Send R
— Group 1-2
— Group 3-4
— Master L-R
5. **TB Mic Level Control**
6. **Talk Switch**
With the OSC switch in the OFF position, this is held in while speaking to the musicians. The volume can be adjusted with the TB level control.

REAR PANEL



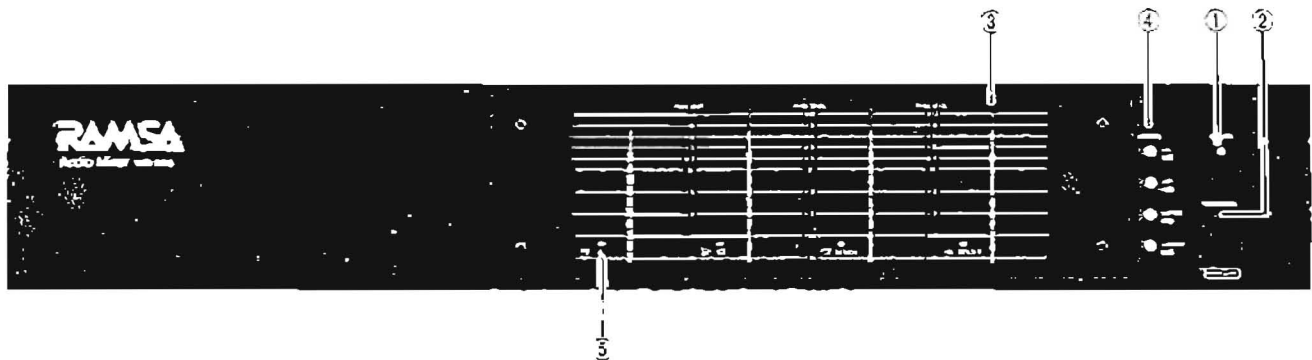
- 1) Input - XLR type connector for Mic and pin jack for Line
Mic & Psd - Balanced
Line - Unbalanced
- 2) Input Insertion Jacks
-10dB level
- 3) Direct Out - pin jack
-10dB level
- 4) Echo Return - pin jack
-20dB level
- 5) Phantom Power On/Off Switch
Supplies power (+48V DC) for condenser microphones.
- 6) Aux In - pin jack
-10dB
- 7) Return In - pin jack
-10dB

- 8) Group Output - pin jack
+4dB and -10dB levels, post group fader
- 9) Master L & R Output - pin L and R mixing buss output, post master L & R fader +4dB and -10dB levels
- 10) Send Out - pin jack
Send mixing buss output, post send out level control
Dual +4dB level outputs
- 11) Studio Out - pin jack
For studio feed, post studio select and level control
+4dB level
- 12) Control Room - pin jack
Control room monitor output, post control room select switch and level control
+4dB level

- 13) Echo Output-pin jack
+4dB level
- 14) OSC Out - pin jack
Output for Oscillator or Talkback signal through OSC/T.B. level control
-10dB level
- 15) Power Source
DC power supply input connector which is connected between the power supply unit with the supplied power supply cable (Connection should be made only with the supplied cable)
- 16) Spare Jack - no connection
- 17) GND
Terminal for grounding

Note:
0dB is referenced to 0.775V rms.

METER PANEL



- 1) Power Indicator Lamp
Indicates that the power supply unit is turned on and the mixing board is supplied with $\pm 20V$ DC power.
- 2) Phantom Power Indicator Lamp
Indicates +48V DC is supplied.

- 3) Meter - 14 point LED peak meter
- 4) Meter Select Switch
Normal for Group 1, 2, 3, 4 outputs.
Push for Master L, R, Send L, R outputs.
- 5) Indicator Light for Meter Selection

IMPORTANT NOTICE

- 1) The power supply should be the exclusive model WU-8081 and the multi core cable for connection should be the exclusive one which is supplied with WU-8081.
- 2) The mixer outputs are available in a few seconds after the power switch is turned on. Also, it takes approximately 5 minutes before the performance of the mixer become fully stabilized. Clicking-sounds might be generated before it is fully warmed up.
- 3) When turning the Phantom Power on, turn the output faders down to avoid the click-sound which might result in damages of speakers or other equipment connected.

And refrain from connecting unbalanced microphones, which might result in damage of the microphones and the mixer's power supply.

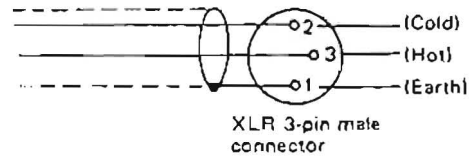
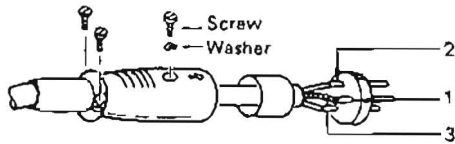
- 4) Input and output levels are referenced to as $\text{OdB} \doteq 0.775\text{V rms}$. And the measurement of microphone input level is made without applying 600 ohm termination at the output of the oscillator. For the other input circuits, the measurement is to be made applying 600 ohm termination at the output of the oscillator.
- 5) In case of taking out the individual modules, unscrew 2 screws at the both sides of the front pad, lift the pad, then disconnect the buss line connector and unscrew one screw fixing each module on the front chassis, and then pull the module out.
- 6) In case of taking out or inserting knobs from or to the knob shaft, match the directions of the cut side of the shaft and the stopper of the knob. Especially for the dual shaft knobs, match the angle of the shaft for outer knobs with that of the inner knobs.
- 7) Be sure to connect the supplied patch plug between the return and send jacks on the rear panel. Unless the patch plug is connected, no signals will be sent out of each input circuit. When connecting a compressor, limiters, or other effect units, however, disconnect the patch plug and connect such external units instead.

CABLE CONNECTIONS To IN/OUT Connectors

- XLR Type Connectors (Input)

- a. Balanced Connection

Connect 2-core shielded cable as shown below.

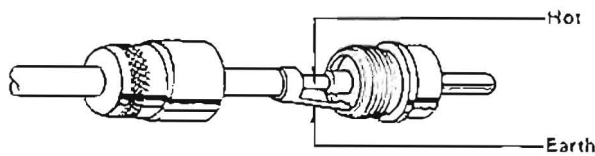


- b. Unbalanced Connection

When using an unbalanced microphone, connect pin No. 3 (Hot) and No. 2, 1 (Earth).

- RCA pin-plug (Input and Output)

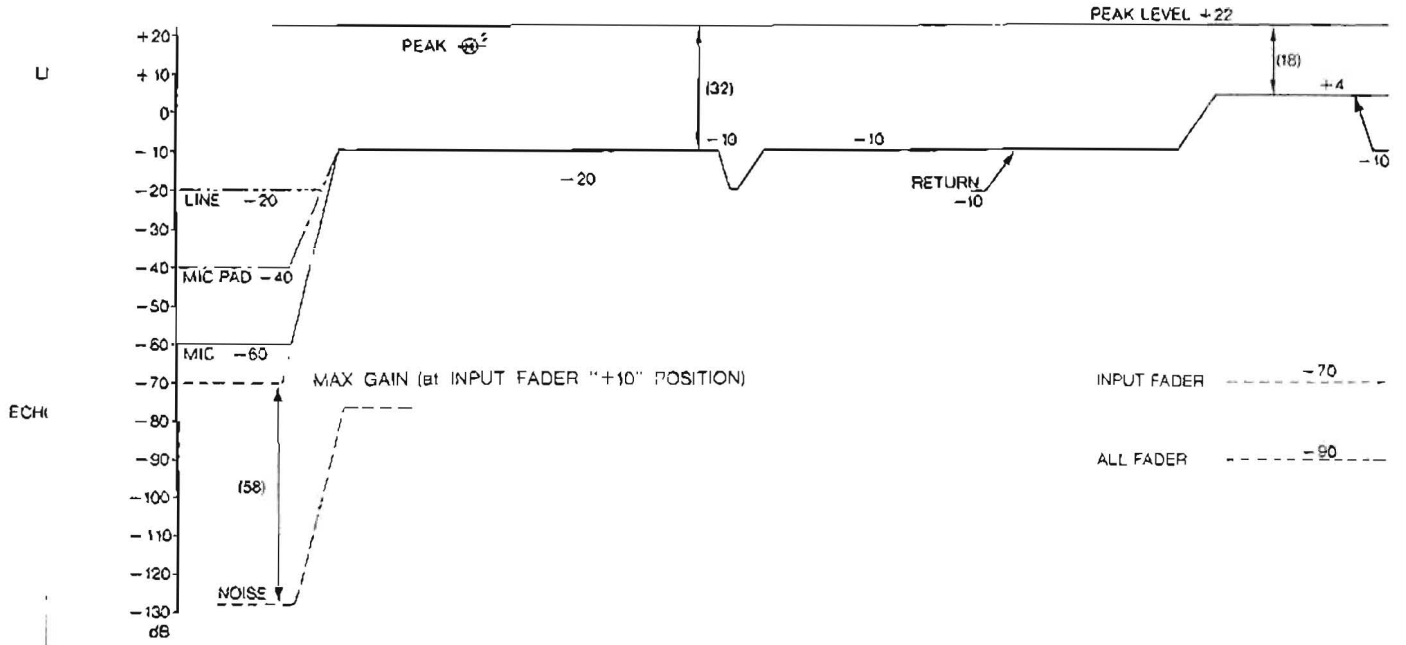
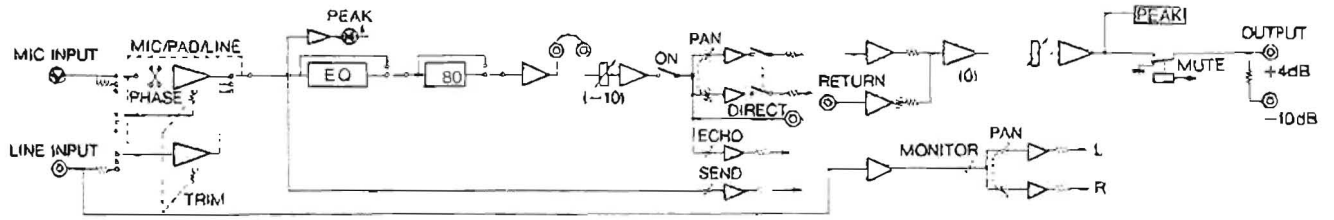
Connect single-core shielded cable as shown below.



SOUND SYSTEM PLANNING TABLE

INPUTS		OUTPUTS	
INPUT 1		GROUP 1 OUTPUT	
INPUT 2		GROUP 2 OUTPUT	
INPUT 3		GROUP 3 OUTPUT	
INPUT 4		GROUP 4 OUTPUT	
INPUT 5		L OUTPUT	
INPUT 6		SEND L OUTPUT	
INPUT 7		ECHO L OUTPUT	
INPUT 8		R OUTPUT	
INPUT 9		SEND R OUTPUT	
INPUT 10		ECHO R OUTPUT	
INPUT 11		CONT RM L OUTPUT	
INPUT 12		CONT RM R OUTPUT	
INPUT 13		STUDIO L OUTPUT	
INPUT 14		STUDIO R OUTPUT	
INPUT 15			
INPUT 16			
ECHO RETURN 1			
ECHO RETURN 2			

LEVEL DIAGRAM



Note: 0 dB = 0.775V

TECHNICAL SPECIFICATIONS

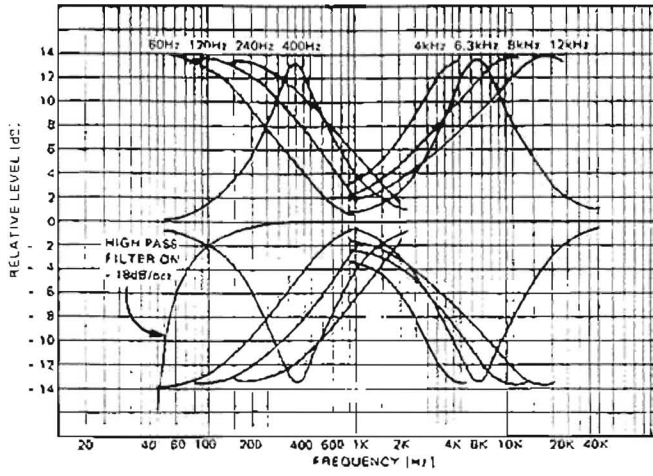
Frequency Response:	MIC INPUT — ±1 0dB 20Hz to 20kHz 64dB Gain at trim control max +4dB at Group Output		
	LINE INPUT — ±0.5dB 20Hz to 20kHz 24dB Gain at trim control max +4dB at Group Output		
THD:	MIC INPUT Less than 0.03% at 20Hz Typical 0.02% Less than 0.03% at 1kHz Typical 0.02% Less than 0.07% at 20kHz Typical 0.05% (74dB Gain, +20dB at Group Output)		
	LINE INPUT Less than 0.07% 20Hz to 20kHz Typical 0.05% (34dB Gain, +20dB at Group Output)		
SMPTE IM Distortion:	Less than 0.03% Typical 0.02% (Mic or Line Inputs +20dB at Group Output)		
Equivalent Input Noise:	-128dB Maximum -132dB Typical IHF A WTD (74dB Gain 150 ohm Source)		
Maximum Input Level:	MIC +10dB at MIC PAD position		
	LINE +30dB		
Maximum Gain:	MIC 74dB ±1.5dB		
	LINE 34dB ±1.5dB		
Cross Talk:	60dB at 1kHz		
CMRR:	70dB Minimum at 1kHz 80dB Typical		
Phantom Power:	+48 DC Regulated 100mA Maximum Current		
Input Channel Equalizer:	High	4k/8k/12kHz	±12dB (Shelving), (±11dB minimum)
	Mid	400 to 6.3kHz	±12dB (Peaking), (±11dB minimum)
	Low	60/120/240Hz	±12dB (Shelving), (±11dB minimum)
Inputs:	MIC IN	16	MIC -60dB to -40dB 5kΩ PAD -40dB to -20dB 5kΩ
	LINE IN	16	-20dB to 0dB 10kΩ
	ECHO RETURN IN	2	-20dB 20kΩ
	RETURN IN	4	-10dB 100kΩ
	AUX IN	2	-10dB 5kΩ
Mixing Busses:	Group	4	
	Master	2	
	Send	2	
	Echo	2	
	Solo	1	
Outputs:	Group	4	+4dB 600Ω -10dB 10kΩ
	Master	2	+4dB 600Ω -10dB 10kΩ
	Send	2	+4dB 600Ω
	Echo	2	+4dB 600Ω
	Monitor	4	+4dB 3kΩ
	Head Phones		2 Watts/8Ω
Maximum Output:	+22dB		
Meters:	4 x 14 point LED Peak Meter		
Fader:	100mm stroke Professional Straight Line Fader		
Peak Factor:	Head Room	32dB	
	Program	18dB	
Power Consumption:	120V AC 60Hz, 140W		
Accessory:	Micky Knob x 1		
Dimensions:	35-53/64"(W)	10-7/16"(H)	29-23/32"(D)
	(910mm)	(265mm)	(755mm)
Weight:	Approx. 104 lbs (47kg)		

*0dB is referenced to 0.775V rms.

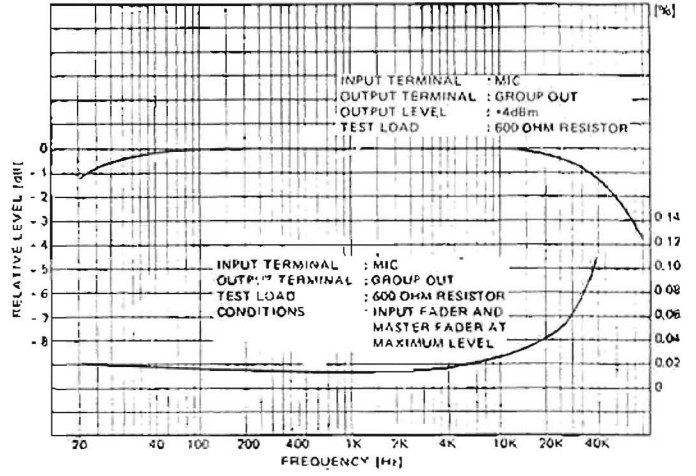
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

TYPICAL PERFORMANCE

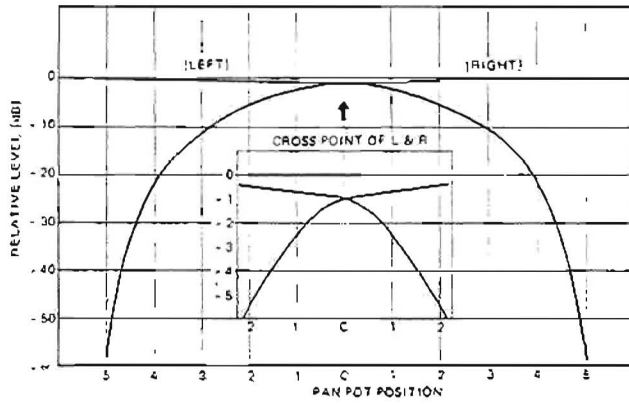
INPUT EQUALIZER



FREQUENCY RESPONSE/TOTAL HARMONIC DISTORTION

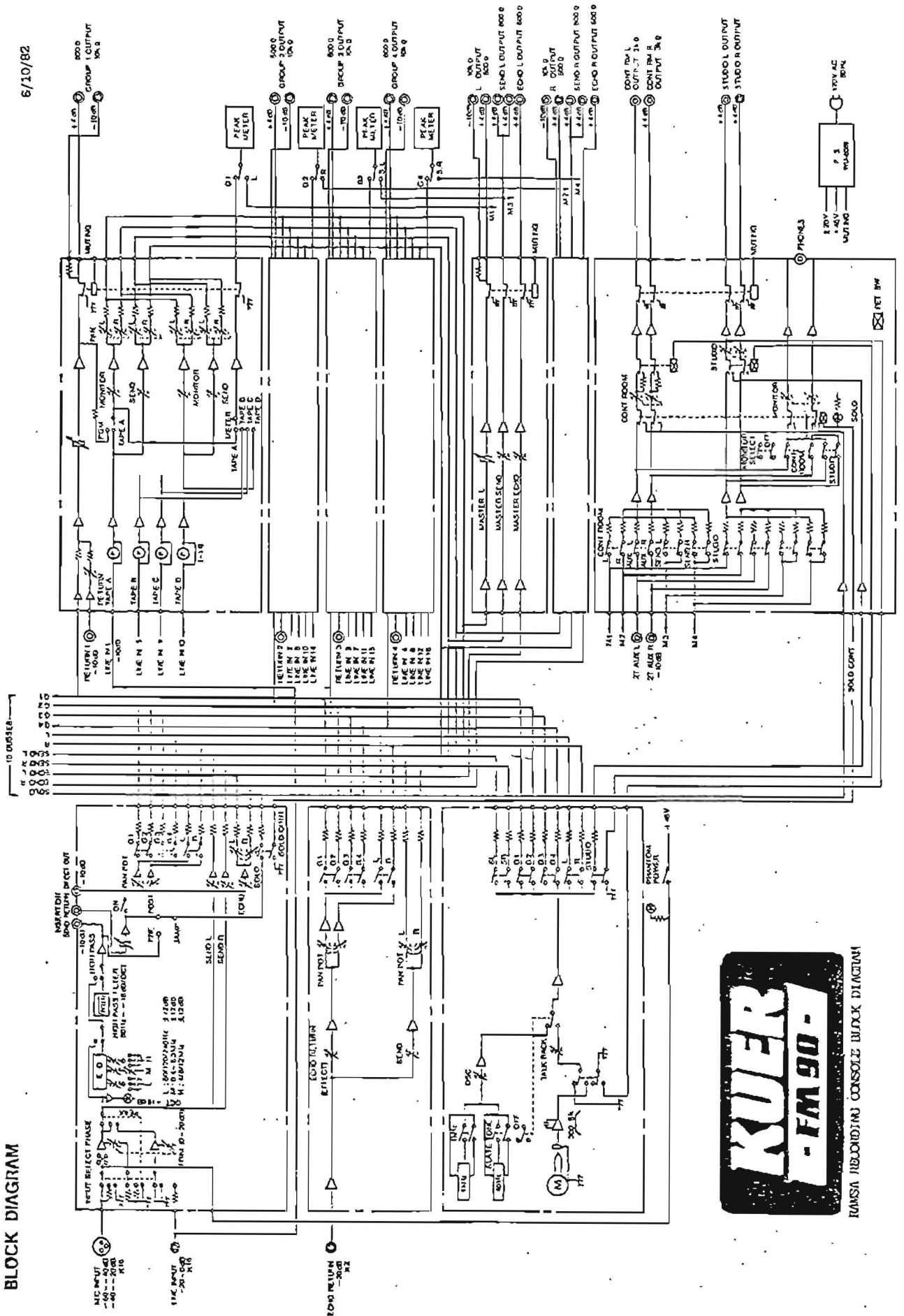


PAN POT



BLOCK DIAGRAM

6/10/82



RAMSA RECORDING CONSOLE BLOCK DIAGRAM