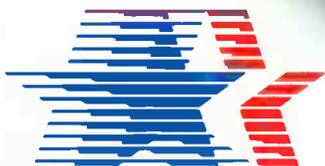


RAMSA

SPENCER BROADCAST
Equipment Sales & Engineering
316 East El Camino Dr. Phoenix, AZ 85020
(602) 242-2211 or 800-221-6941

WR-8616 POST PRODUCTION & RECORDING CONSOLE



*Supplier of Sound Systems
for the 1984 Olympic Games*

Panasonic®

The Ramsa WR-8616. A Highly Flexible Modular Mixing Console for Post-Production and Recording Applications.

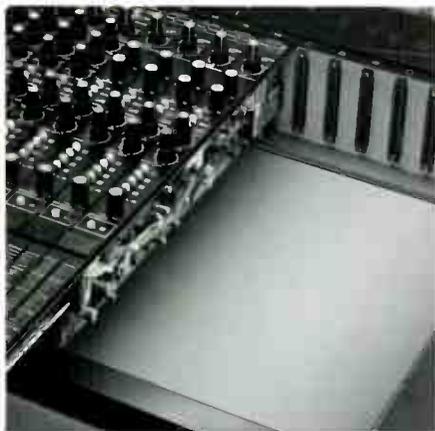
With the extensive use of multi-track recording and post-production techniques, today's recording engineers exercise a great deal of control over the final outcome of a recording session. The RAMSA WR-8616 is designed to meet the needs of these demanding professionals.

The WR-8616, a mixer specifically designed for recording and broadcast applications, employs a versatile mainframe that can accommodate a variety of modules to meet the user's specific need. Such a design approach facilitates interfacing with a variety of equipment, such as tape cartridge machines, 2 to 16 track tape machines, turntables, or up to 16 microphones.



Modular construction for various applications

The WR-8616 offers a choice of two input modules, a mono mic/line module (WU-8101) and a stereo line module (WU-8106). Depending upon which modules are used, the WR-8616 can accommodate up to 16 MIC IN signals, or 32 LINE IN signals, or a combination thereof. For example, 12 mono modules and 4 stereo modules would have the capability of 12 MIC IN signals and 20 LINE signals.



Two group output modules are offered: a basic group output module (WU-8107) comprised of a fader, LR send and pan, solo and group on switches and a return control; and a tape monitor group module (WU-8102) with all the features of the basic group module except for the channel on/off

switch. In addition, the tape monitoring group module offers 4 channels of tape monitoring with both monitoring and send L-R buses, level and pan controls. Thus, all levels of post-production and recording applications are accommodated.

Versatile signal routing provides for a wide variety of applications. The input channel signals can be routed through any one or combination of the group output channels to the L-R master output channels. Assignment to the group output channels can be direct or via the pan control. In broadcast applications such a format allows up to three simultaneous stereo mixes.

A mono output master provides a simultaneous mono signal by means of the L-R master outputs.

Four auxiliary outputs, comprised of two effect and two sends (L-R), allow a variety of signal processing and/or monitoring functions.

A pre/post fader select switch assures flexibility with these sends.



Continuously Variable Equalization



A three-band continuously variable equalizer on mono input module WU-8101 provides High, Mid, and Low frequency adjustments for precise control of the sound spectrum for each input. The High and Low controls are continuously variable with shelving type characteristics. The Mid control provides a continuously variable peak-dip arrangement for more precise tonal adjustment. An EQ in/out switch allows for comparison of EQ vs. non EQ signals. A high pass filter at 80 Hz provides 18 dB/octave of low frequency cutoff.

Versatile Signal Monitoring

Complete access to all 16 inputs via direct monitoring lines permits simultaneous monitoring without altering patch cord connections by use of the tape monitor group module WU-8102. Two independent stereo tape monitor mixes can be produced in addition to the mixes on the send and L-R buses. Stereo monitoring is provided for GP 1-2, GP 3-4 and L-R allowing a preview of one mix while another mix is up and running. Solo monitoring is also provided on all input and group modules, and effect return.

Field Durability



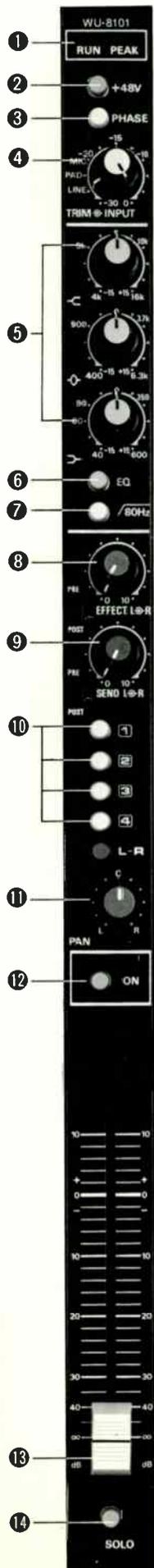
Proven 100mm "cure-press" fader controls on the input, group and master modules are designed for positive, precise adjustment of the volume settings. Industrial grade components and sophisticated wiring techniques, such as the wire wrapped connectors ensure long

term reliability. The modular design of the WR-8616 also makes it easy for the user to detect any possible malfunction and initiate quick on-the-spot module replacement if needed.

Operational Convenience

The WR-8616 has been human engineered for easy operation. For instance, all 16 input signals can be monitored with eight LED straight bar-graph meters. This metering section has 1-8 or 9-16 input monitoring selectable switches. The six output signals, incorporating the four group and L/R masters, can be monitored by six separate VU meters. In addition, the send signals, effect signals and solo signals can be monitored with the same six VU meters.

MODEL WU-8101 MONO INPUT MODULE



This module is interchangeable with a stereo input module (WU-8106).

1. Run/Peak LEDs

The run LED is lit when signals at either the pre-amp or post-EQ position are above -18 dB.

The peak LED indicates that 6 dB of headroom remains in the pre-amp section only. By adjusting the input/trim control until a constant run indication is achieved, you can obtain the optimum signal to noise ratio, while retaining low distortion. The LED indication applies to pre-equalizer and pre-fader signals.

2. +48 V DC Phantom Power Switch

The voltage of +48 V for the phantom condenser microphone is supplied only to the MIC line by turning on this switch.

3. Phase Switch

This switch allows instantaneous phase reversal of the microphone or the equipment connected to 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 input 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).

4. Input/Trim Control

The input trim knob consists of an outer switch for MIC, PAD, or LINE position.

MIC: -60 dB to -30 dB

PAD: -40 dB to -10 dB

LINE: -20 dB to $+10$ dB

The inner knob adjusts the input gain.

The trim takes effect before the insertion jack, allowing adjustment to the optimum level for connecting external equipment.

5. Equalizer

These controls offer the engineer maximum flexibility in tonal adjustment due to a sophisticated three-band, continuously-variable-frequency equalizer section included. The inner knob controls the level and includes a 0 dB centerdetent. The outer knob adjusts the frequency.

These rotary controls provide three bands of equalizer adjustment:

HIGH 4 kHz to

16 kHz ± 15 dB (shelving)

MID 400 Hz to

6.3 kHz ± 15 dB (peaking)

LOW 40 Hz to

600 Hz ± 15 dB (shelving)

A continuously variable rotary control knob permits precise frequency adjustment, converting more than one octave around the center frequency.

6. Equalizer Switch

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

7. High-Pass Filter Switch

This filter provides a sharp -18 dB/octave cutoff at 80 Hz. This is useful for eliminating low-frequency vibrations (which may occur when using hand-held mics) or to provide greater microphone isolation.

8. Effect L/R Controls with Pre/Post Selector Switch

The effect controls utilize a highly practical approach.

The effect signal may be derived post-equalizer, post-fader or post-equalizer, pre-fader.

9. Send L/R Controls with Pre/Post Selector Switch

These controls adjust the signal levels 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. The send signal may be derived post-equalizer, post-fader or pre-equalizer, pre-fader. The send L/R may also be used during mix-down as effects sends.

10. Program Bus Assign Switches

This section assigns the input signal to any of the four Group outputs, or directly to the L, R output section.

11. Pan Control

Turning the pan control to the left assigns L channel and turning to the right assigns R channel. During mixdown, the pan is an effective tool for creating stereo sound field.

* Pan switch on the printed circuit board allows you to pan between G1 and G2, and G3 G4. (The pan

pot is effective only between L and R outputs when shipped out of factory.)

12. Channel On Switch

When this switch is engaged, the Input signal is sent to all of the assigned output channels. When it is switched out, the signal to the group and master output buses is muted; the direct output signal is disconnected as well. Mic leakage or noise caused by a mic not in use is thus eliminated. The effect and send signals are not affected, when switched in the pre-fader position.

13. Input Fader

The extra-long, 100-mm stroke fader assures precise level setting; reference dB levels are also indicated.

14. Solo Switch

This switch is used to monitor the pre-fader or post-fader signal at each Input module individually. It can be locked in the ON position, monitoring simultaneously of several modules achieved. 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 speakers will also provide a mono/solo signal. This is especially useful for conducting final checks prior to actual takes.

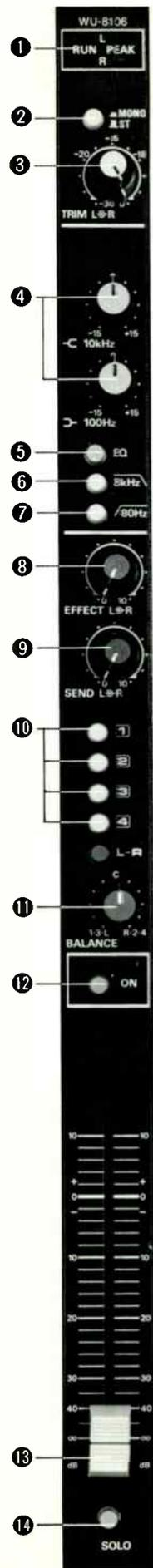
* The solo signal may be derived post-fader by switching a jumper lead on the printed circuit board.

* Insertion Pre/Post Switch

This switch on the printed circuit board in the module allows you to set the insertion point to either pre- or post-EQ.

(OPTION)

MODEL WU-8106 STEREO INPUT MODULE



The WU-8106 is capable of accepting a set of stereo signals (left and right). This module is interchangeable with a mono input module (WU-8101).

1. Run/Peak LEDs

The run LED is lit when the post-equalizer signal is above -18 dB. Individual LEDs are provided for the left and right channels. The peak LED is lit when less than 6 dB of headroom remains at any point in the input channel.

2. Mono/Stereo Switch

When this switch is depressed, stereo signals are converted into a monaural signal.

3. Trim L/R Controls

These knobs adjust the input level for the head amplifiers.

The input level may vary between -20 dB and $+10$ dB, a range of 30 dB. The inner knob is for the left channel, and the outer knob, for the right channel. These controls may be used to obtain balanced input levels for the left and right channels.

4. Equalizer

A two-band (high and low) equalizer is employed in the equalizer section.

HIGH 10 kHz
 ± 15 dB (shelving)
 LOW 100 Hz
 ± 15 dB (shelving)

5. Equalizer Switch

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

6. Low-Pass Filter Switch

This filter provides a sharp -12 dB/octave cut off at 8 kHz. It can be used to reduce tape hiss noise and disc scratch noise.

7. High-Pass Filter Switch

This filter provides a sharp -18 dB/octave cutoff at 80 Hz. This is useful for eliminating low-frequency vibrations.

8. Effect L/R Controls

The effect controls utilize a highly practical approach. The effect signal is derived post-EQ, post-fader.

The inner knob controls the left channel, and the outer knob controls right channel. (Note that the signal in the left channel cannot be sent to the right channel or the other.)

9. Send L/R Controls

When recording, these controls may be used to adjust the signals sent to the musician's headphones, via the master cue send control. In other applications, the send signal may be used as an auxiliary output. The send signal is derived post-EQ, pre-fader.

10. Program Bus Assign Switches

This section assigns the stereo input signals to the appropriate output buses.

In the stereo mode the left input signal may be assigned to group bus 1, group bus 3, master bus left or any combination of the three. The right input signal may be assigned to the group 2, group 4 or the right master bus in a similar manner.

When the mono switch is depressed, a summed monaural signal may be assigned to any combination of the six output buses.

11. Balance Control

This control knob adjusts the balance between the left and right signals. Balance may be simultaneously adjusted between channels 1 and 2, 3 and 4, and left and right.

12. Channel On Switch

When the switch is engaged, the input signal is sent to the assigned output channels.

When it is switched out, the signal to the group and output buses is muted.

Mic leakage or noise caused by a mic not in use will thus be eliminated. The send control signals are not affected.

13. Input Fader

The extra-long, 100-mm stroke fader assures precise level settings; reference dB levels are also indicated.

14. Solo Switch

This switch is used to monitor the pre-fader or post-fader signal at each Input module individually. Because it can be locked in the ON position, several modules can be monitored simultaneously. Activation of the solo button is indicated by the solo 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 speakers will also provide a mono/solo signal. This is especially useful for conducting final checks prior to actual takes.

* The solo signal may be derived pre-fader or post-fader. The mode is selected by a switch on the printed circuit board. The SOLO switch is set at pre at the time of shipment.

The solo signal is a monaural signal consisting of the left and right signals.

* The stereo input module has no function of direct out and insertion.

(OPTION)

MODEL WU-8107 BASIC GROUP MODULE

MODEL WU-8102 TAPE MONITOR GROUP MODULE

This module is interchangeable with the tape monitor group module (WU-8102).

1. Program Monitor Controls

The group output signal is sent to the master module. The inner knob adjusts the level, and the outer knob adjusts the balance between L and R.

2. Return Control

This control knob adjusts the input level of the signal from the return-in connector located on the rear panel.

3. Channel On Switch

When this switch is turned on, the green LED lights, and the group signal is routed to the group out connector on the rear panel and the program monitor control.

4. Group Fader

The extra-long, 100-mm stroke fader assures precise level settings; reference dB levels are also indicated.

5. Solo Switch

Depressing this switch allows individual monitoring of the group signal.

The signal will be routed via the solo bus line to the control room out and the headphone monitor out.

* The solo signal is normally derived pre-fader.

* To derive the solo signal post-fader, change the jumper lead connections on the printed circuit board.



(OPTION)



This module is interchangeable with the basic group module (WU-8107).

The WU-8102 tape monitor group module combines the summing and output functions of the basic group module with a versatile 4 input-4 output monitor mixer.

By using the appropriate number of WU-8102 modules, the WR-8616 may be tailored to 4-track, 8-track or even 16-track recording applications.

Individual monitor section mute switches and an independent group send control work together to allow instantaneous transition between operational modes, or may be used to simultaneously monitor up to 32 inputs (16 mic and 16 lines).

This tremendous flexibility can save countless hours of set-up and repatching time in the busy recording studio or production facility.

1. Line Monitor Selector Switches

The line monitor switches have the following functions:

1) In the case of a mono input module (WU-8101):

Selects a signal from those connected to the line input terminals. The signal will be derived immediately after the line head amplifier.

2) In the case of a stereo input module (WU-8106):

Selects a signal from mixed monaural signals:

* Since one of this module can monitor four input sources, when four of this modules are mounted, up to 16 input sources can be monitored.

* The following table shows which corresponds to which channel number.

Module Location	Channel Number			
	Group 1	Group 2	Group 3	Group 4
A	1	5	9	13
B	2	6	10	14
C	3	7	11	15
D	4	8	12	16

(OPTION)

MODEL WU-8103 MASTER MODULE

2. Line Monitor Controls

After a signal has been selected, this knob controls the amount of signal to be sent to the send L and R buses (or the master module's L and R buses). Each of four channels (A through D) has a set of control knobs.

* The inner knob of the send control adjusts the send signal's level, and the outer knob determines its position between left and right.

* The inner knob of the monitor control adjusts the monitor signal's level, and the outer knob determines its position between left and right.

* By using the send control, you can mix the output signals from the multi-track recorder (has 16 tracks) connected to monaural input modules, and obtain a cue signal for the musician.

* The monitor control allows you to roughly mix the MTR signals to check the quality of recording.

3. Program Monitor Controls

These control knobs adjust the signal sent from the group bus to the master module. Input signals are first grouped into four channels of signals. The program monitor controls are then used to adjust the group signals to the master stereo pair.

4. Return Control

This control knob adjusts the input level of the signal fed via the return-in connector located on the rear panel.

5. Group Fader

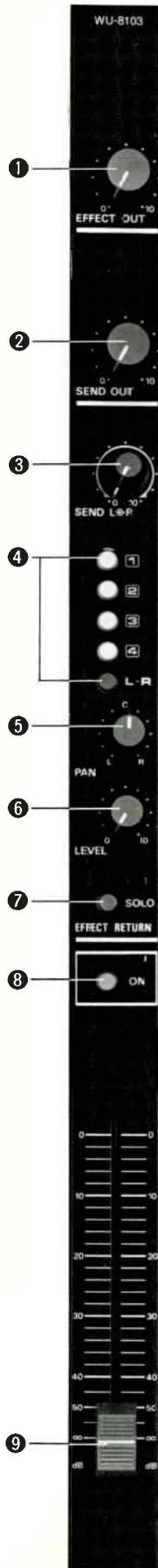
The extra-long, 100-mm stroke fader assures precise level settings; reference dB levels are also indicated.

6. Solo Switch

* This switch allows monitoring only this group module.

* The solo signal is derived pre-fader.

* To derive the solo signal post-fader, change the jumper lead connections on the printed circuit board.



This module provides complete control facilities for the various signals from the Input and group modules, effect units, and other signal processors. Because the master module can control all signals, the settings made on the Input and group faders may be retained.

1. Master Effect Control

This controls the master level of the signals sent to the effect unit.

2. Master Send Control

This provides master level control of the headphones cue signals, which are sent from the input module or line monitor section. This feature can be used for headphone monitoring by the performers in the studio.

3. Send L/R Controls

These assign the effect return signals to the left and right send mixing buses, where the effect can be added to the musician's send signals. The outer knob is a pan control, and the inner knob is for level adjustments.

4. Effect Return Assign Switches

These switches assign the signal returned from the effect unit to the selected program bus.

5. Pan Control

This pan pot assigns the effect return signals to your selected L/R bus (using effect return assign switch L-R).

6. Effect Return Level

This control adjusts the level of the effect return inputs.

7. Solo Switch

Depressing of this switch allows individually monitoring the signal fed via the effect in jack. The signal will be routed via the solo bus line to the control room out and the headphones monitor out.

8. Channel On Switch

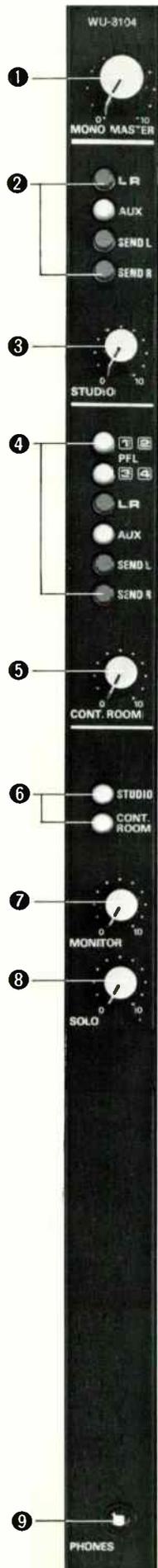
When this switch is turned on, the green LED lights, and the master out signal is routed to the rear panel connector.

9. Master Fader

The extra-long, 100-mm stroke assures precise level settings; reference dB levels are also indicated.

(STANDARD)

MODEL WU-8104 MONITOR MODULE



In response to demands for truly flexible monitoring capability, Ramsa has included facilities in the WR-8616 that allow checks at all stages of the mixer output, both in the studio and in the control room.

1. Mono Master Control

This control knob adjusts the monaural signal mixed from the master L and R signals. The signal is routed to the monaural master output connector.

2. Studio Select Switches

These switches select one of the four modes available for studio monitoring. The L-R position allows performers to monitor the stereo mix-down 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.

3. Studio Control

This controls the output level for the studio monitoring.

4. Control Room Out Switches

These switches select one of the six monitoring modes available.

Monitoring Mode	Switch Name	Signal	Mode	Monitoring Point
1	1-2	Group 1, 2	(Stereo)	Pre Fader
2	3-4	Group 3, 4	(Stereo)	Pre Fader
3	L-R	Master L, R	(Stereo)	Post Fader
4	AUX	Aux input	(Stereo)	—
5	Send L	Send L	(Mono)	Post Send Master
6	Send R	Send R	(Mono)	Post Send Master

5. Control Room Volume Control

This sets the output level for control room listening. When the solo switch of any input or output module is pressed, the solo LED lights, and the solo signal of that channel will replace the selected signal.

6. Phones Select Switches

You can select headphone monitoring from either the studio or the control room with these switches.

7. Monitor Control

This control adjusts the listening levels for stereo headphone monitoring.

8. Solo Level Control

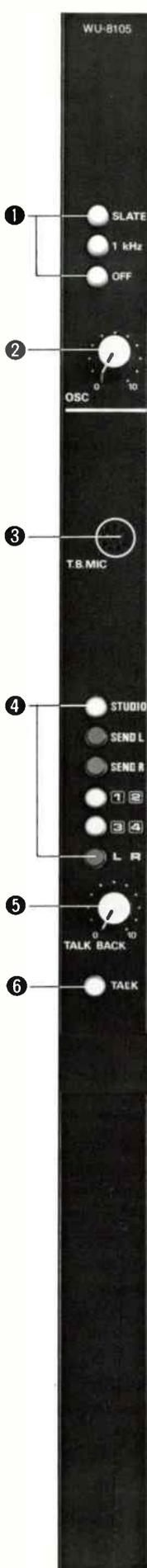
This controls the input and output solo signals to prevent sudden level changes when switchings between the normal and solo modes.

9. Headphones Jack

Standard 1/4" phone jack for stereo headphones.

(STANDARD)

MODEL WU-8105 TB/OSC MODULE



For close communication between the mixing operator and the studio musicians, this module features a convenient provision for two-way talkback. Internal oscillator facilities make it easy to confirm that the controls are set properly prior to actual recording of the program.

1. OSC Select Switches

With these switches, the operator can choose either an 80-Hz slate tone or a 1-kHz sine wave. When the OFF position is selected, the talkback facility may be activated.

2. Oscillator Output Level Control

3. Talkback Microphone

Built-in condenser microphone.

4. T.B./OSC Assign Switches

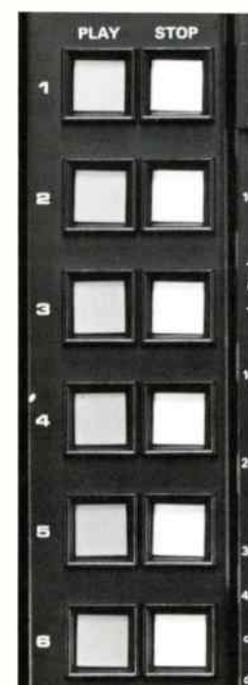
These switches assign the T.B./OSC signal to output buses. When the OSC switch is on, the OSC (oscillator) signal will be sent; and when the OSC switch is off, the T.B. mic (talkback mic) signal will be sent.

5. T.B. 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 T.B. level control.

REMOTE CONTROL SWITCHES



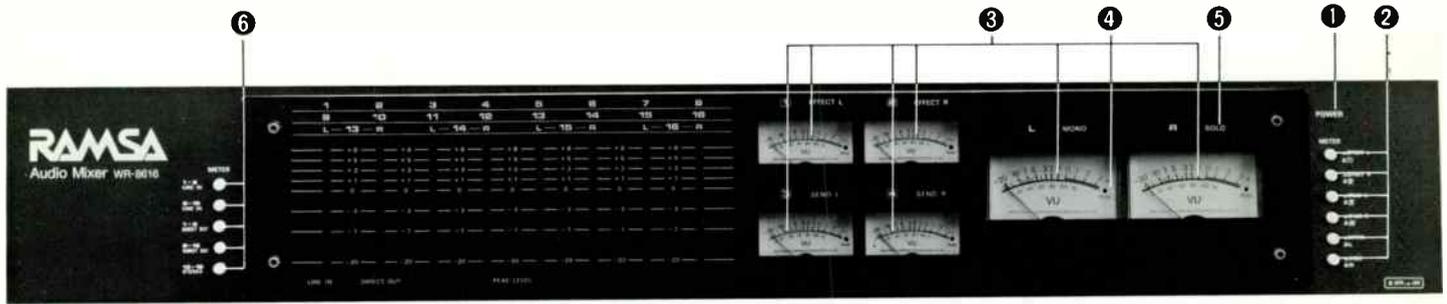
These switches play or stop the external turntables, tape recorders, or cartridge machines connected to the remote control connector. Up to six units can be controlled.

The connector for the switches are located on the back panel, printed REMOTE.

The switches are momentary contact button type.

(STANDARD)

METER PANEL



1. Power Indicator Lamp

Indicates that the power supply unit is turned on and the mixing board is supplied with ± 20 V DC power.

2. VU Meter Selectors

These switches allow monitoring of 12 important signals with the six VU meters. The monitorable output signals are: master L and R, group 1 through 4, send L and R, effect L and R, mono and solo.

3. VU Meters

For monitoring group, master, send, mono, and effect outputs.

4. Peak LED

Lights when group, master, effect, solo, mono, and send outputs exceed +18 dB.

5. Meter Select Lamp

Provided for each of group, master, send, mono, solo and effect outputs. These high-visibility indicators verify which signal is monitored at any given time.

6. LED Meter Selectors

The following table shows the switch positions and signals being monitored.

Notes for monitoring the meters:

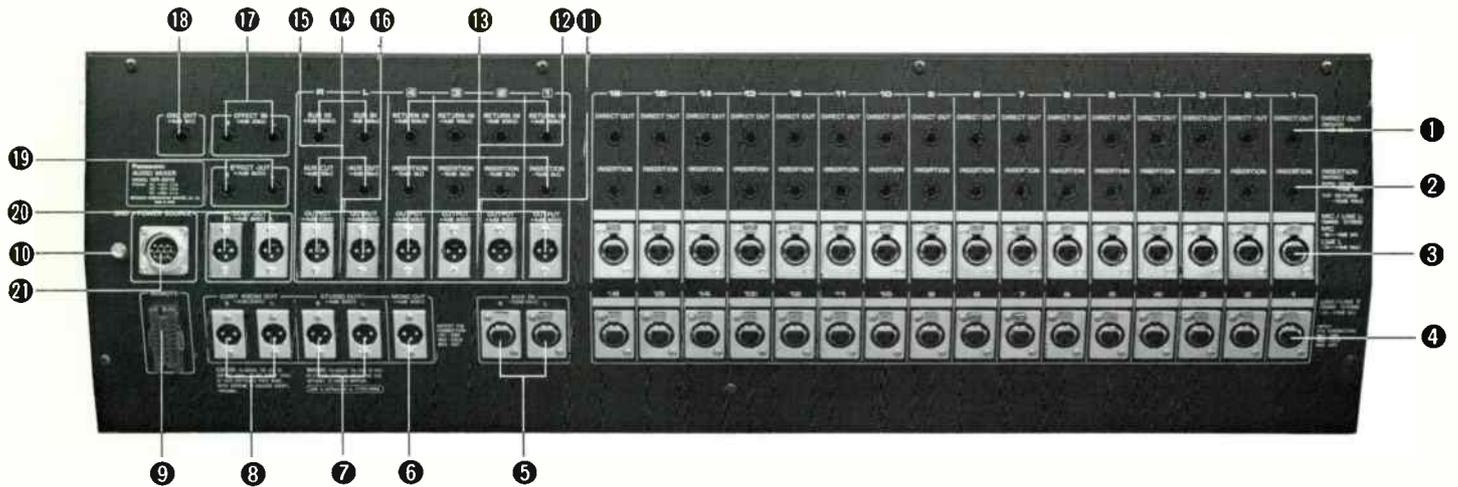
1. The LED bar graph meters indicate "0" when the signal level—line input (stereo) or direct out signal—is +4 dB. When in the 1-8 Line In or 9-16 Line In mode, if a -20 dB signal is fed into the line input of the mono input module, the LED bar graph meter will not light. This is because the -20 dB position on the bar graph scale corresponds to the line input level of -16 dB.

2. Stereo input modules mounted on channels 1 through 16 cannot be monitored by selecting 13-16 Stereo. If you select 1-8 Line In (or 9-16 Line In), however, you can monitor the signals as mixed mono signals. When all channels contain mono input modules, selecting 13-16 Stereo will not let you monitor any signals.

6. LED Meter Selectors

Switch Name (Switch Position)	Monitored Signal	Channel Affected	Remark	
			Mono Input	Stereo Input
1-8 (A) Line In	Line Input	1-8	Signal Post Line Pre-Amp	Summed Post Line Pre-Amp
9-16 (B) Line In	Line Input	9-16	Signal Post Line Pre-Amp	Summed Post Line Pre-Amp
1-8 (C) Direct Out	Direct Out	1-8	Signal Post-Fader	—
9-16 (D) Direct Out	Direct Out	9-16	Signal Post-Fader	—
13-16 (E) Stereo	Stereo Line Input	13-16	—	Stereo Post Line Pre-Amp

REAR PANEL



1. Direct Output

The direct out jack can be easily used for a direct send to a multi-track recorder, or as an individual cue or effect send. Each jack accepts a 1/4" TS phone plug. +4 dB 600 ohms unbalanced.

Active for mono input module only. No output available when stereo input module is used.

2. Input Insertion

For external signal processing units such as compressors, limiters, equalizers. Each jack accepts a 1/4" TRS (Tip-Ring-Sleeve) format phone plug.

Send: -10 dB 3 k ohms (ring)

Return: -10 dB 10 k ohms (tip)

Unbalanced

This jack is available only for Mono Input Module.

3. Input

i) Mono input module

Mic input -60 to +10 dB
3 k ohms balanced

ii) Stereo input module

Line input -20 to +10 dB
10 k ohms balanced
XL-type connector

4. Input

i) Mono input module

Line input -20 to +10 dB
10 k ohms balanced

ii) Stereo input module

Line R input -20 to +10 dB
10 k ohms balanced
XL-type connector

5. Aux Inputs

Auxiliary inputs for L and R channels.

-10 dB 10 k ohms balanced

These terminals are connected to the aux on the monitor module (WU-8104).

XL-type connectors

6. Mono Output

Summed mono signal post-fader L+R signals

+4 dB level 600 ohms balanced

XL-type connector.

The level can be controlled by the mono

master control on the monitor module (WU-8104).

7. Studio Outputs

+4 dB level 600 ohms balanced
XL-type connectors

8. Cont. Room Outputs

Control room monitor outputs

+4 dB level 600 ohms balanced
XL-type connectors

9. Remote Control Connector

The terminals of the remote control switches—located in the lower part of the front panel—are connected to these pins. These are six circuits for Play and six circuits for stop.

10. GND

Ground terminal.

11. Group Outputs

Group bus outputs. The signals come post group fader.

+4 dB level 600 ohms balanced
XL-type connectors

12. Group Insertions

Group insertion jacks. Used to connect external equipment (compressors, limiters, equalizers, etc.) to process the signal of any given group bus. Each jack accepts a 1/4" TRS format phone plug.

Send: -10 dB 3 k ohms (Ring)

Return: -10 dB 10 k ohms (Tip)

13. Return Inputs

These jacks are used to feed external signals modules of group 1 through 4. Useful when connecting outputs from a 4-track recorder or when connecting another mixer. The signal can be adjusted with the return control of that group. Each jack accepts a 1/4" TS phone plug.

+4 dB level 10 k ohms unbalanced

14. Sub Inputs

Auxiliary input jacks for master L and R. Can be used to connect another mixer. Each jack accepts a 1/4" TS phone plug.

+4 dB level 100 k ohms unbalanced

15. Aux Outputs

Auxiliary output jacks for master L and R. Each jack accepts a 1/4" phone plug.

+4 dB level 10 k ohms unbalanced

16. Master Outputs

Post-fader left and right outputs

+4 dB level 600 ohms balanced
XL-type connectors

17. Effect Inputs

Connect to the output of any echo unit, harmonizer, delay unit, phase shifter, etc. Each jack accepts a 1/4" TS phone plug.

+4 dB or -20 dB level
10 k ohms unbalanced

(Switchable by changing a jumper lead on the master module printed circuit board.)

18. OSC Output

Output jack for the oscillator (or talkback) signal. The signal can be adjusted with the OSC (or T.B.) level control. This jack accepts a 1/4" TS phone plug.

+4 dB level 3 k ohms unbalanced

19. Effect Outputs

Effect L and R mixing buses; The signals are routed via the effect master level control. Each jack accepts a 1/4" TS phone plug.

+4 dB level 600 ohms unbalanced

20. Send Outputs

Send L and R mixing buses. The signals are routed via the send output level control.

XL-type connectors.

+4 dB level 600 Ohms balanced

21. Power Source Connector

Connector for DC power supply. DC is applied from the power supply unit (Model WU-8083) through the attached power cable. (No other cable can be used.)

Notes:

* 0 dB is referenced to 0.775 V RMS

* TRS format

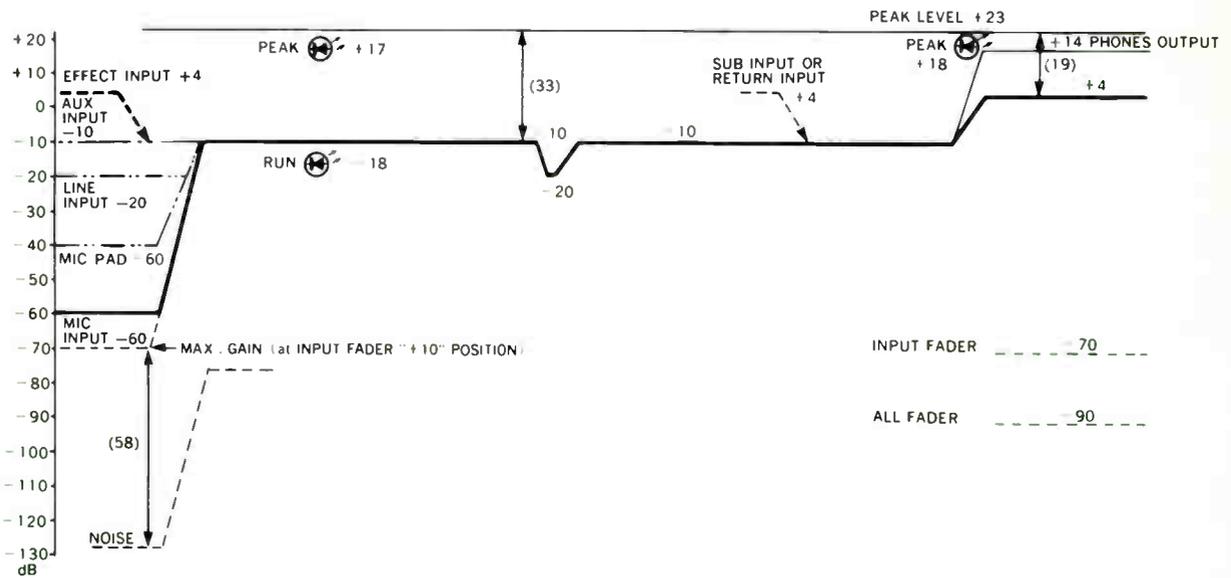
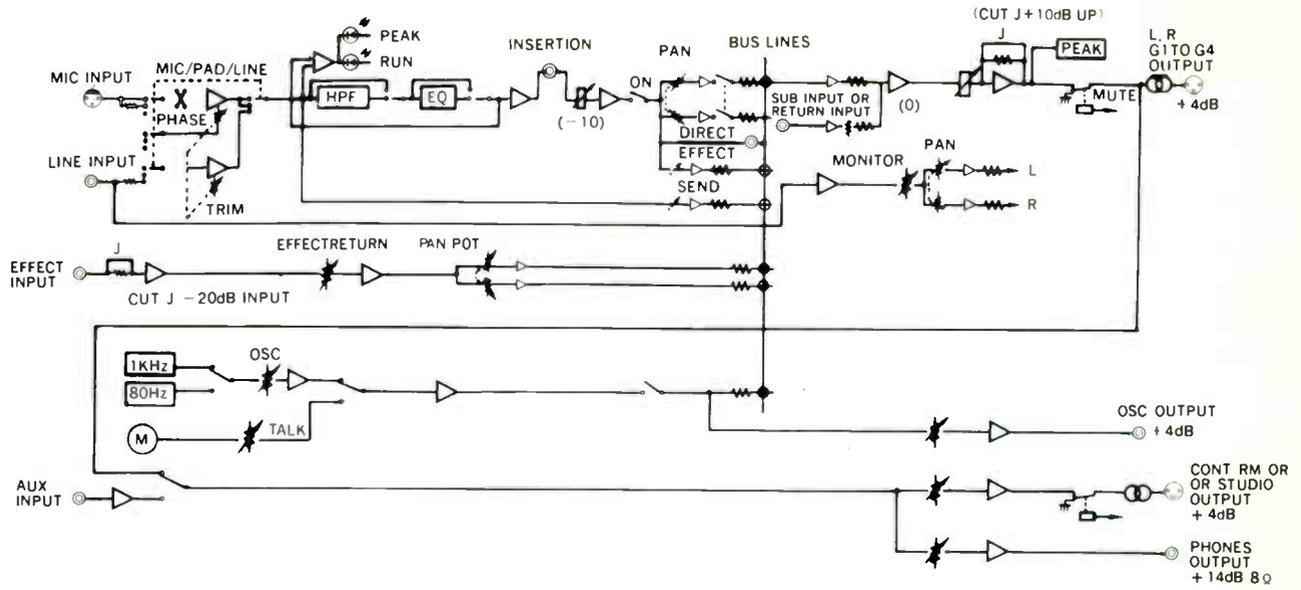
Tip: Return

Ring: Send

Sleeve: Common (Shield)

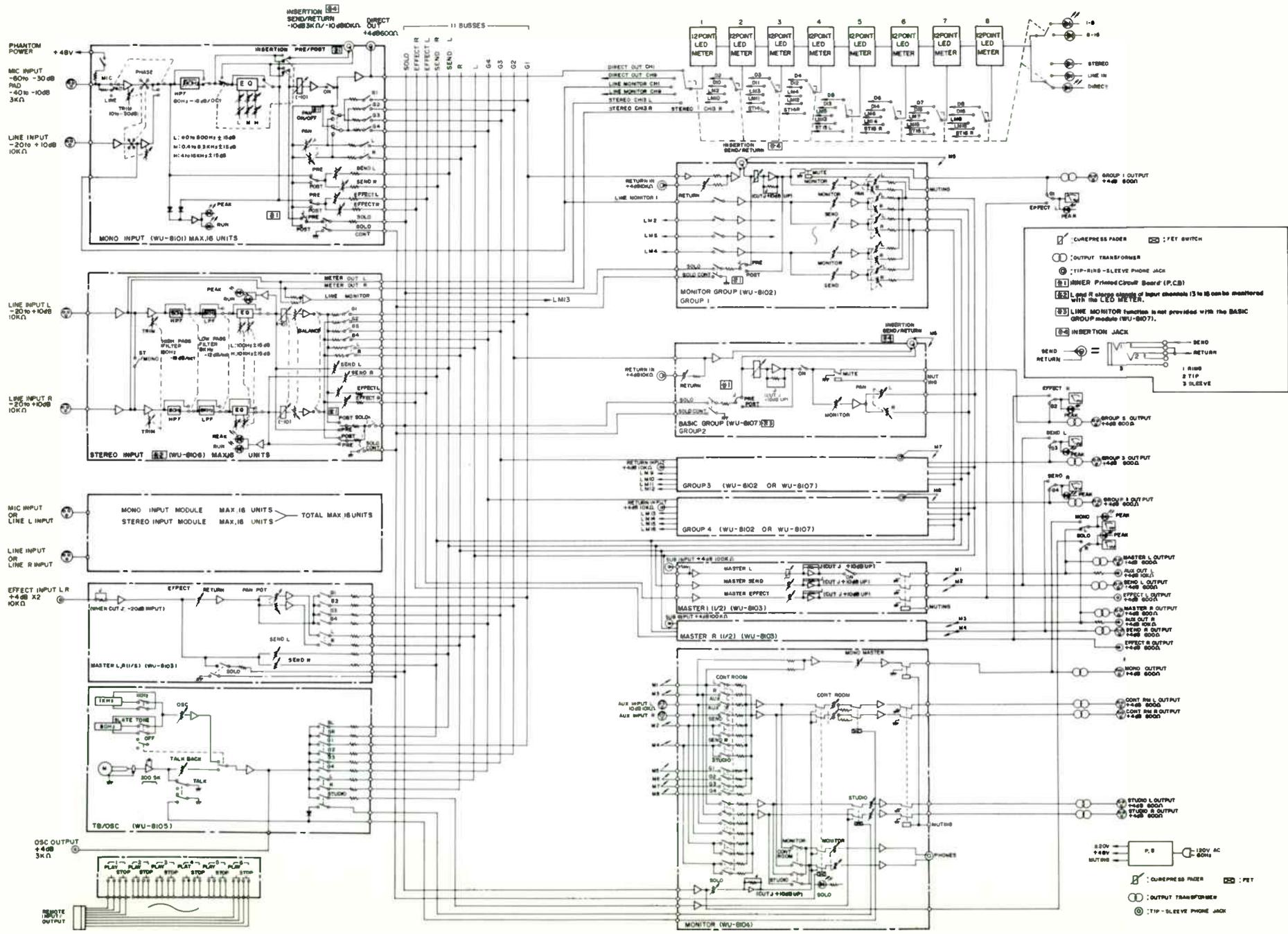


LEVEL DIAGRAM



Note: 0 dB = 0.775V rms.

BLOCK DIAGRAM



LEGEND

- : QUINCEPRESS PADER
- : FET SWITCH
- : OUTPUT TRANSFORMER
- : TIP-SLEEVE PHONE JACK
- : TIP-PRINTED CIRCUIT BOARD (P.C.B.)
- : LINE MONITOR function is not provided with the BASIC GROUP module (WU-B107).
- : INSERTION JACK

SEND RETURN JACK

- 1 RING
- 2 TIP
- 3 SLEEVE

Post-Production Application

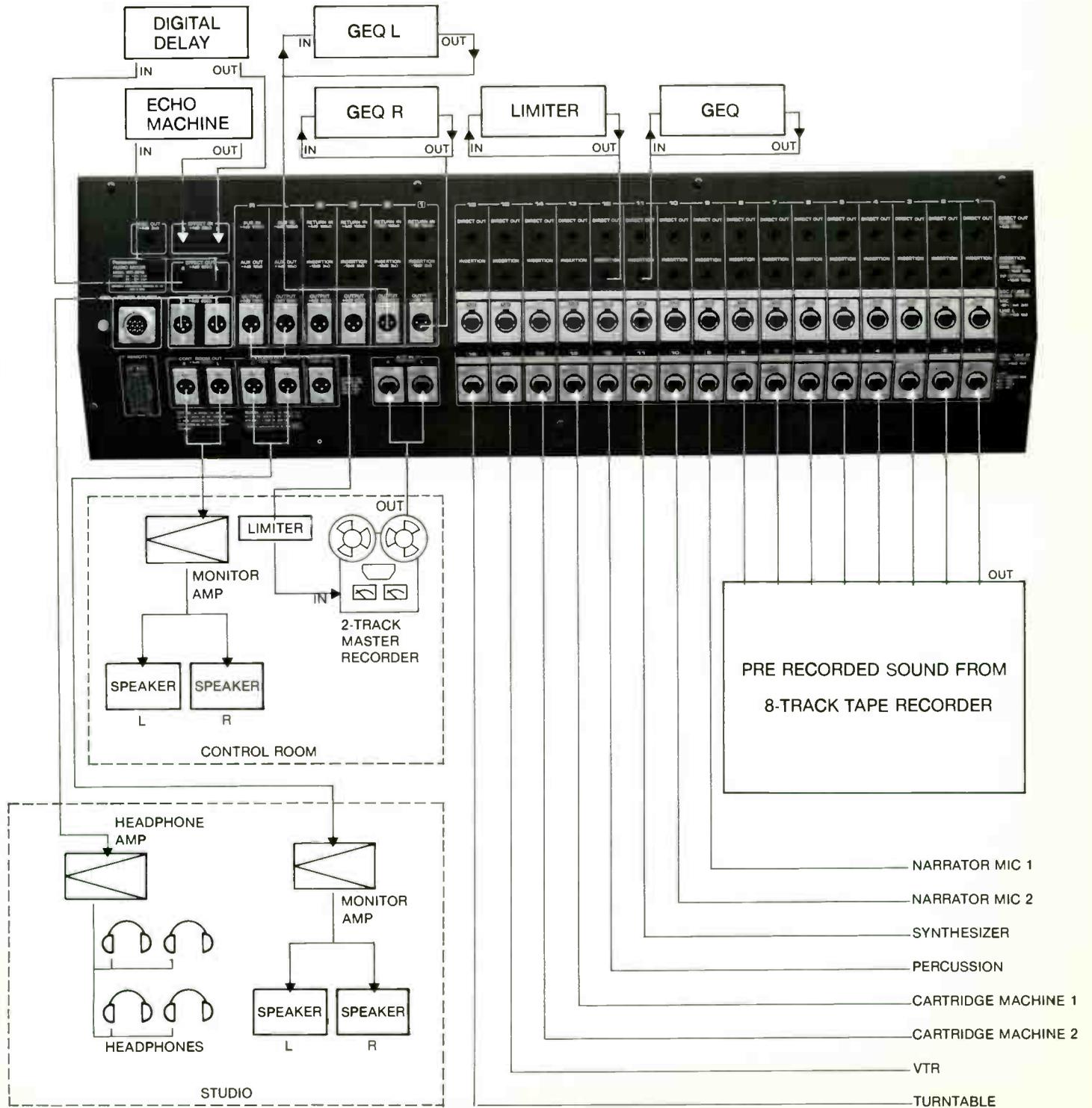
When used in a post-production application, input channels 1 through 8 on the WR-8616 can be used for playback of a previously recorded 8-track tape recording. Input channels 9 through 12 can be used for additional microphones or for instruments. In any case, all of these inputs would utilize WU-8101 mono input modules. Input channels 13 through 16 would be used for tape cartridge machines and/or turntables, effects and short advertising segment playback. A VTR can also be used as a source utilizing these input positions. Typically, input channels 13 through 16 use WU-8106 stereo input modules.

Effect left and right outputs would be used with an external reverb and digital delay. The effect units' outputs are returned

through the WR-8616's left and right inputs. The output configuration of the WR-8616 allows you to simultaneously record 4-track, 2-track and mono tapes if desired.

Send left and right outputs would be used as studio cue sends to enable musicians or actors to monitor the program as required. Extensive monitoring is achieved by means of studio and control room outputs. Two discrete monitor mixes are provided by use of the two 16-channel tape monitor outputs.

The talkback function facilitates communication between control room and studio personnel.



Recording and Mixdown

When used in a recording and mixdown situation, the WR-8616 might be used for several aspects of studio or remote recording. If a large number of mics and lines were being used at once to do a 16-track recording, these sources could be applied to the channel inputs, and the channel outputs would then be connected directly to the tape machine.

A 4-track recording could be made directly from the program outputs, which would be sub-mixed from any number of channel inputs. In fact, 16-track recordings could also be built up in groups of four using the program outputs assigned to different recorder inputs.

In any case, once the multi-track tape is obtained, it may be mixed down to mono, stereo and or quad, by applying the tape play to the console's channel inputs. These signals may be panned left or right across any odd to even numbered program buses, using the input modules' built-in panning facilities.

Program buses could then be set up for stereo perspectives. As an alternative, the multiple input channels could be mixed down

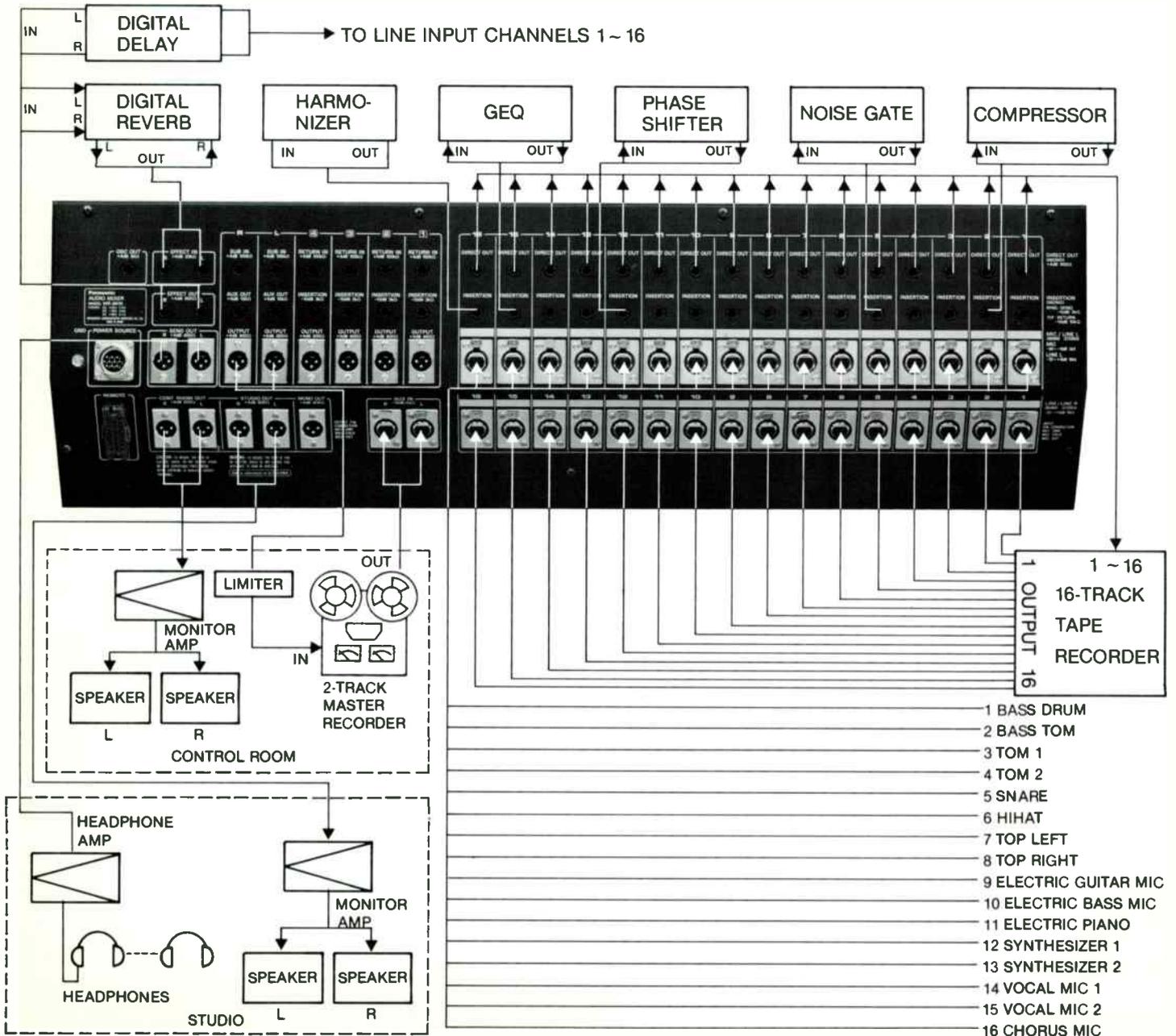
into various subgroups of instruments or vocals. The master faders then provide the opportunity to balance the mix.

The monitor matrix channels may be used to provide headphone cue mixes for performers who wish to record with, or on top of, existing tracks. The foldback outputs are used to mix stereo pairs, one for the control room and one for the studio monitor speakers.

One effect output feeds a reverb and the other a delay line. The output of these devices is brought back to the console via the effects input. During mixdown, the send L/R outputs can be used as effects sends.

A compressor/limiter and a parametric equalizer are shown here as they would be used for individual input channels. Parametric equalizers also might be used to tailor the sound of each of the sub-groups, accessible via all program insertion patch points.

The talkback mic can be assigned to all program buses for conversation into the studio.



TECHNICAL SPECIFICATIONS

Frequency Response:	MIC INPUT — $-1\frac{1}{2}$ dB 20Hz to 20kHz 74dB Gain at trim control maximum + 4dB at Group, Master Output LINE INPUT — $-1\frac{1}{2}$ dB 20Hz to 20kHz 34dB Gain at trim control maximum + 4dB at Group, Master Output LINE INPUT — $-1\frac{1}{2}$ dB 20Hz to 20kHz 34dB Gain at trim control maximum + 4dB at Direct Output	
THD:	MIC INPUT, LINE INPUT Less than 0.3% at 20Hz Typical 0.2% Less than 0.1% at 1kHz Typical 0.05% Less than 0.1% at 20kHz Typical 0.05% (MIC INPUT 64dB Gain + 20dB at Group, Master Output) (LINE INPUT 24dB Gain + 20dB at Group, Master Output)	
Equivalent Input Noise:	- 128dB Maximum - 132dB Typical IHF "A" WTD (MIC INPUT 74dB Gain 150 ohm Source)	
Maximum Gain:	MIC : 74dB \pm 1.5dB (84dB w/Jumper cut) LINE : 34dB \pm 1.5dB (44dB w/Jumper cut)	
Cross Talk:	60dB at 1kHz	
CMRR:	70dB Minimum at 1kHz 80dB Typical (MIC INPUT 74dB Gain)	
Input Channel Equalizer:	High 40Hz to 600Hz \pm 15dB (Shelving) Mid 400Hz to 6.3kHz \pm 15dB (Peaking) Low 4kHz to 16kHz \pm 15dB (Shelving) (High, Mid, Low \pm 13dB minimum)	
Mixing Buses:	Group 4 Master 2 Send 2 Effect 2 Solo 1	
Meter:	8x 12 Point LED Peak Meters 6VU Meters (with Peak LED)	
Peak Factor:	MIC	33dB
	LINE	19dB
	Program	18dB

Power consumption: AC 120V 60Hz, 200W

Dimension: 35-53/64"(W) x 10-7/16"(H) x 29-23/32"(D)
(910mm) (265mm) (755mm)

Weight: Approx. 114 lbx. (52 kg)

* 0dB is referenced to 0.775V
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

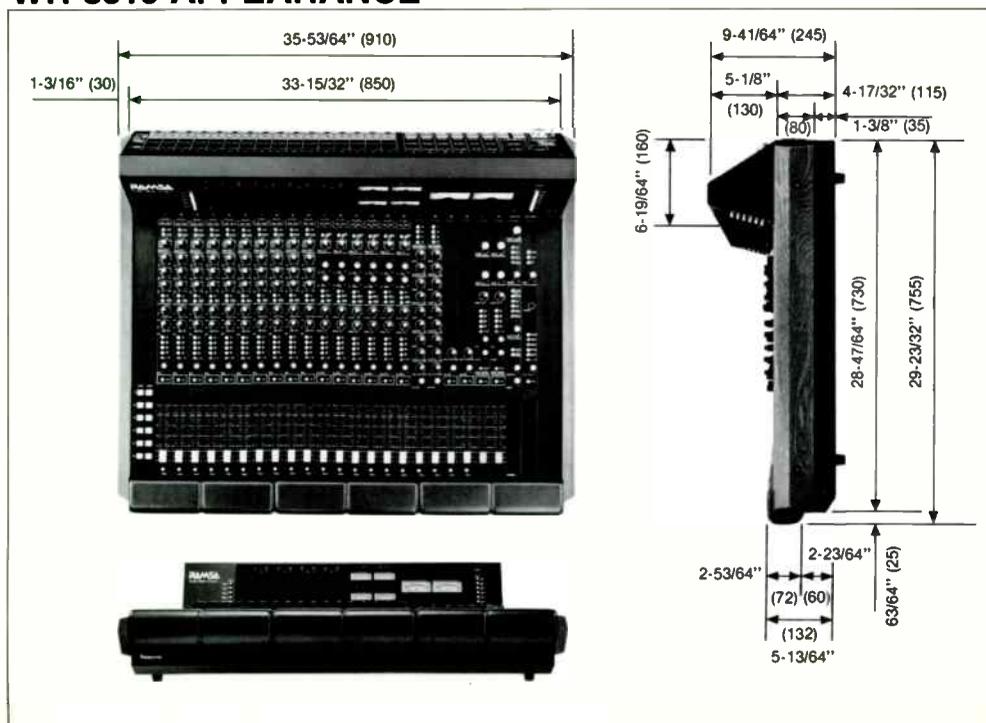
INPUT SPECIFICATIONS

Connection	INPUT Level	
	Nominal	Maximum before clip
MIC IN MIC PAD 1 to 16	- 60dB ~ - 30dB - 40dB ~ - 10dB	- 27dB ~ + 3dB - 7dB ~ + 23dB
LINE IN (STEREO L, R IN) I to 16	- 20dB ~ + 10dB	+ 14dB ~ + 23dB
EFFECT RETURN IN L, R	+ 4dB / - 20dB	+ 28dB / + 13dB
RETURN IN G1 to G4	+ 4dB	+ 28dB
SUB IN L, R	+ 4dB	+ 28dB
AUX IN L, R	- 10dB	+ 23dB
Insertion Return Send 1 to 16, G1 to G4	- 10dB - 10dB (Output) Level	+ 28dB + 23dB (Output) Level

OUTPUT SPECIFICATIONS

Connection	INPUT Level	
	Nominal	Maximum before clip
GROUP OUTPUT 1 to 4	+ 4dB	+ 23dB
Master Output L, R	+ 4dB	+ 23dB
MONO Master Output	+ 4dB	+ 23dB
Send Output, L, R	+ 4dB	+ 23dB
Studio Output L, R	+ 4dB	+ 23dB
Cont. Room Output L, R	+ 4dB	+ 23dB
Effect Output L, R	+ 4dB	+ 23dB
Direct Output 1 to 16	+ 4dB	+ 23dB
AUX Output L, R	+ 4dB	+ 23dB
OSC/T.B. Output	+ 4dB	+ 23dB (T.B MIC)
HEADPHONES	-	+ 14dB 2W (RL = 8 Ω) 25mW (RL = 600 Ω)

WR-8616 APPEARANCE



POWER SUPPLY WU-8083



- Power Switch
- Power Indicator LED
- + 20V, - 20V, + 48V DC
- LED's indicate regulated
- DC voltages as:
- + 20 V
- 20 V
- + 48 V (phantom power)

RAMSA

Panasonic®

NEW TECHNOLOGY PRODUCTS GROUP
Professional Audio Systems

PANASONIC INDUSTRIAL COMPANY
Division of Matsushita Electric Corporation of America
One Panasonic Way, Secaucus, NJ 07094 (201) 348-7470

INDUSTRIAL AUDIO DEPARTMENT

MATSUSHITA ELECTRIC OF CANADA LIMITED
5770 Ambler Drive
Mississauga, Ontario, L4W 2T3 (416) 624-5010

DISTRIBUTED BY:

SPENCER BROADCAST
316 East El Camino Drive
PHOENIX, ARIZONA 85020
Audio Video RF (602) 242-2211

Weight
Specify
World Radio History